Chapter 8
State Indicators

Elementary/Secondary Education

Higher Education

Workforce

Financial Research and Development Inputs

Research and Development Outputs

Science and Technology in the Economy

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Introduction

Chapter Overview

To address the interest of the policy and research communities in the role of science and technology (S&T) in state and regional economic development, this chapter presents findings on state trends in S&T education, the employed workforce, finance, and research and development. This chapter includes 58 indicators for individual states, the District of Columbia, and Puerto Rico.

Although data for Puerto Rico are reported whenever available, they frequently were collected by a different source, making it unclear whether the methodology used for data collection and analysis is comparable with that used for the states. For this reason, Puerto Rico was not ranked with the states, not assigned a quartile value, and not displayed on the maps. Data for United States territories and protectorates, such as American Samoa, Guam, Northern Mariana Islands, and Virgin Islands, were available only on a sporadic basis and thus are not included.

The indicators are designed to present information about various aspects of state S&T infrastructure. The data used to calculate the indicators were gathered from public and private sources. When possible, data covering a 10-year span are presented to assist in identifying trends. However, consistent data were not always available for the 10-year period, in which case, data are given only for the years in which comparisons are appropriate. Most indicators contain data for 2008–09; some contain data for 2010.

Ready access to accurate and timely information is an important tool for formulating effective S&T policies at the state level. By studying the programs and performance of their peers, state policymakers may be able to better assess and enhance their own programs and performance. Corporations and other organizations considering investments at the state level may also benefit from this information. The tables are intended to provide quantitative data that may be relevant to technology-based economic development. More generally, the chapter aims to foster further consideration of the appropriate uses of state-level indicators.

Types of Indicators

Fifty-eight indicators are included in this chapter and grouped into the following areas:

- Elementary and secondary education
- Higher education
- Workforce
- Financial R&D inputs
- Research and development outputs
- S&T in the economy

The first two areas address state educational attainment. Student achievement is expressed in terms of performance, which refers to the average state score on a standardized test, and proficiency, which is expressed as the percentage of students who have achieved at least the expected level of competence on the standardized test.

Comparable state-level performance data are not available for high school students. Although performance and proficiency data in science are available for students in grade 12 at the national level but not at the state level, data on performance and proficiency in mathematics is not available at either the federal or state level for students in grade 12. Instead, mastery of college-level material through performance on Advanced Placement Exams has been included as a measure of the skills being developed by the top-performing high school students. Other indicators in education focus on state spending, teacher salaries, student costs, and undergraduate and graduate degrees in S&E. Three indicators measure the level of education in the populations of individual states.

Workforce indicators focus on the level of S&E training in the employed labor force. These indicators reflect the higher education level of the labor force and the degree of specialization in S&E disciplines and occupations.

Financial indicators address the sources and level of funding for R&D. They show how much R&D is being performed relative to the size of a state's business base. This section enables readers to compare the extent to which R&D is conducted by industrial, academic, or state agency performers.

The final two sections provide measures of outputs. The first focuses on the work products of the academic community. It includes the number of new doctorates conferred, the publication of academic articles, and patent activity from the academic community and from all sources in the state.

The last section of output indicators examines the robustness of a region's S&T-related economic activity. These indicators include venture capital activity, Small Business Innovation Research awards, and high-technology business activity. Although data that adequately address both the quantity and quality of R&D results are difficult to find, these indicators offer a reasonable information base.

This edition includes six new indicators. Consistent with other indicators in the chapter, they are normalized. The first covers AP Calculus AB exams and is presented as a percentage of high school students scoring 3 or higher on the exam. The second covers the number of bachelor's degrees in science and engineering that were conferred relative to the size of the population in the appropriate age range. The third provides an indication of the degree to which a state's educational infrastructure provides the highest level of training in science and engineering and is presented as the number of doctorate degrees conferred in science and engineering as a percentage of all science and engineering degrees conferred. The fourth indicator covers state funds for higher education and is presented as the percentage of state gross domestic product. The fifth addresses the amount of state funding for public research universities per enrolled student. Finally, the last new indicator focuses on the percentage of technical workers in a state's workforce.

Data Sources and Considerations

Raw data for each indicator are presented in the tables. Each table provides an average value for all states, labeled "United States." For most indicators, the state average was calculated by summing the values for the 50 states and the District of Columbia for both the numerator and the denominator and then dividing the two. Any alternate approach is indicated in the notes at the bottom of the table.

The values for most indicators are expressed as ratios or percentages to facilitate comparison between states that differ substantially in size. For example, an indicator of higher education achievement is not defined as the absolute number of degrees conferred in a state because sparsely populated states are unlikely to have or need as extensive a higher education system as states with larger populations. Instead, the indicator is defined as the number of degrees per number of residents in the college-age cohort, which measures the intensity of educational services relative to the size of the resident population.

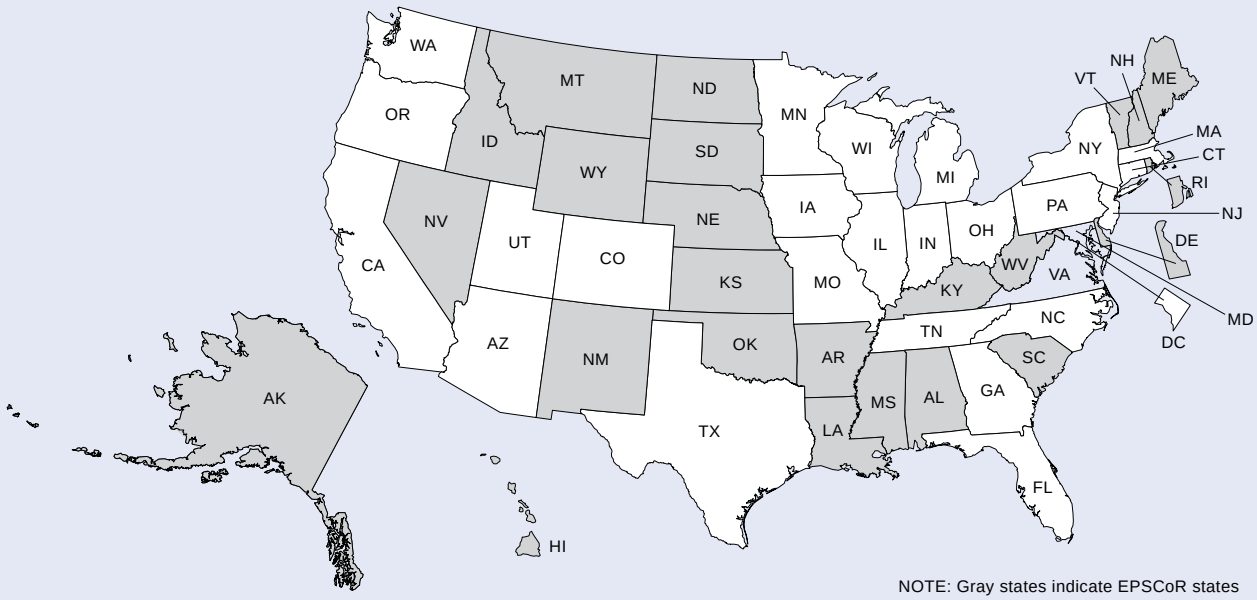
Readers must exercise caution when evaluating the indicator values for the District of Columbia. Frequently, the indicator value for the District of Columbia is appreciably different from the indicator values for any of the states. The District of Columbia is unique because it is an urban region with a large federal presence and many universities. In addition, it has a large student population and provides employment for many individuals who live in neighboring states. Indicator values can be quite different depending on whether data attributed to the District of Columbia are based on where people live or where they work.

Key Elements for Indicators

Six key elements are provided for each indicator. The first element is a map color-coded to show in which quartile each state placed on that indicator for the latest year that data were available. This helps the reader quickly grasp geographic patterns. On the indicator maps, the darkest color indicates states that rank in the first or highest quartile, and white indicates states that rank in the fourth or lowest quartile. Cross-hatching indicates states for which no data are available.

The sample map below shows the outline of each state. The state is identified by its postal code. In 1978, Congress initiated the Experimental Program to Stimulate Competitive Research (EPSCoR) at the National Science Foundation to build R&D capacity in states that have historically been less competitive in receiving federal R&D funding. Subsequently, several federal agencies established similar programs, the largest of which is the Institutional Development Award (IdeA) program at the National Institutes of Health. States shown with a gray background in figure 8-A are states in the EPSCoR group. The EPSCoR group of states are those eligible

Figure 8-A
U.S. map and list of abbreviations



NOTE: Gray states indicate EPSCoR states

AK	Alaska	HI	Hawaii	ME	Maine	NJ	New Jersey	SD	South Dakota
AL	Alabama	IA	Iowa	MI	Michigan	NM	New Mexico	TN	Tennessee
AR	Arkansas	ID	Idaho	MN	Minnesota	NV	Nevada	TX	Texas
AZ	Arizona	IL	Illinois	MO	Missouri	NY	New York	UT	Utah
CA	California	IN	Indiana	MS	Mississippi	OH	Ohio	VA	Virginia
CO	Colorado	KS	Kansas	MT	Montana	OK	Oklahoma	VT	Vermont
CT	Connecticut	KY	Kentucky	NC	North Carolina	OR	Oregon	WA	Washington
DC	District of Columbia	LA	Louisiana	ND	North Dakota	PA	Pennsylvania	WI	Wisconsin
DE	Delaware	MA	Massachusetts	NE	Nebraska	RI	Rhode Island	WV	West Virginia
FL	Florida	MD	Maryland	NH	New Hampshire	SC	South Carolina	WY	Wyoming
GA	Georgia								

for EPSCoR-like programs in at least five federal agencies or departments. The 24 EPSCoR states are Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming. The EPSCoR Program is discussed further in chapter 5, "Academic Research and Development," in the sidebar "EPSCoR: The Experimental Program to Stimulate Competitive Research." The remaining 26 states are considered states in the non-EPSCoR group.

The second element is a state distribution chart illustrating state values for the latest data year for that indicator (figure 8-B). States are listed alphabetically by postal code and are centered over the mid-point of the range for their indicator values. Indicator values are presented along the x-axis of the chart. States stacked together have indicator values in the same range but not necessarily identical values. The reader is referred to the table for values of the indicators. All of the indicators are broad measures, and several rely on sample estimates that have a margin of error. Small differences in state values generally carry little useful information.

The third element, at the bottom of the map box, is a short citation for the data source. The full citation appears under the table on the facing page.

The fourth element, in a shaded box on the lower left side of the page, is a summary of findings that includes the national average and comments on national and state trends and patterns for the particular indicator. Although most of the findings are directly related to the data, some represent interpretations that are meant to stimulate further investigation and discussion.

The fifth element, on the lower right side of the page, is a description of the indicator and includes information pertaining to the underlying data.

The final element is the data table, which appears on the facing page. Up to 3 years of data and the calculated values of the indicator are presented for each state, the District of Columbia, and Puerto Rico.

For selected indicators, the data table has been expanded to include the average data and indicator value for the 50 states and the District of Columbia, and the averages for the EPSCoR and non-EPSCoR states. These averages have been calculated in two ways. The first two lines, "EPSCoR states" and "Non-EPSCoR states," treat each group as a single geographical unit, ignoring the division of that unit into separate states. The ratio for the group is calculated by totaling the numerator value of each of the states in the group and the denominator value of each of the states in the group and dividing to compute an average. For example, the EPSCoR states average of R&D by gross domestic product by state, shown in table 8-39, is calculated by summing the R&D of all the EPSCoR states, summing the gross domestic product of these states, and dividing to compute an average. States with more R&D and a larger gross domestic product affect this average more than smaller ones do, just as data on California affect U.S. totals more than data on Wyoming do.

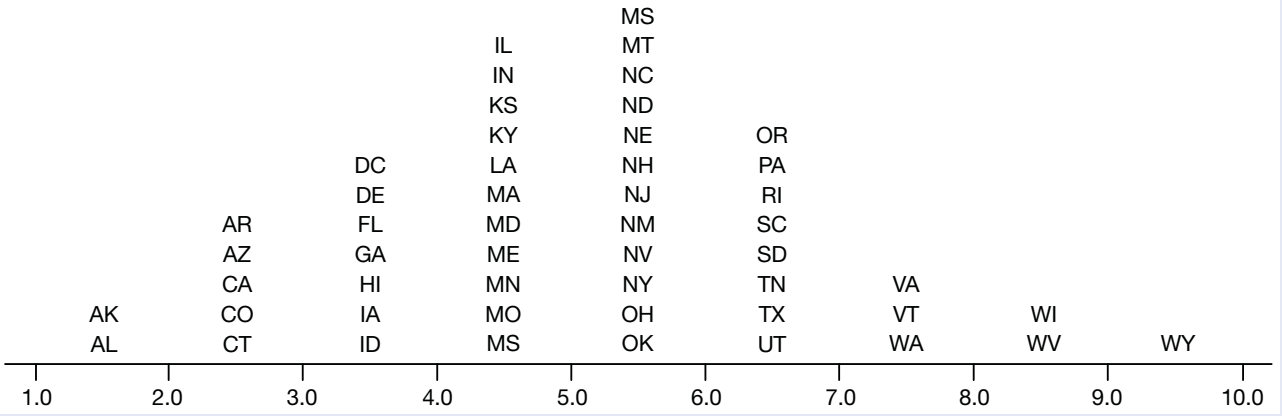
The first and second lines, "Average EPSCoR state value" and "Average non-EPSCoR state value," represent the average of the individual state ratios for an indicator. The average EPSCoR state value for R&D by gross domestic product by state is calculated by summing the ratios for the 24 EPSCoR states and dividing by 24. All state ratios count equally in this computation. Examples of this calculation are shown in tables 8-5 and 8-18.

High-Technology Industries

To define high-technology industries, this chapter uses a modification of the approach employed by the Bureau of Labor Statistics (BLS) (Hecker 2005). BLS's approach is based on the intensity of high-technology employment within an industry.

High-technology occupations include scientific, engineering, and technician occupations. These occupations employ

Figure 8-B
Example state distribution chart



workers who possess an in-depth knowledge of the theories and principles of science, engineering, and mathematics, which is generally acquired through postsecondary education in some field of technology. An industry is considered a high-technology industry if employment in technology-oriented occupations accounts for a proportion of that industry's total employment that is at least twice the 4.9% average for all industries (i.e., 9.8% or higher).

In this chapter, the category "high-technology industries" refers only to private sector businesses. In contrast, BLS includes the "Federal Government, excluding Postal Service" in its listing of high-technology industries.

Each industry is defined by a four-digit code that is based on the listings in the 2002 North American Industry Classification System (NAICS). The 2002 NAICS codes contain a number of additions and changes from the previous 1997 NAICS codes that were used to classify business establishments in data sets covering the period 1998–2002, and therefore cannot be applied to data sets from earlier years.

The list of high-technology industries used in this chapter includes the 46 four-digit codes from the 2002 NAICS listing shown in table 8-A.

Appendix Tables

Additional data tables pertaining to the indicators in this chapter have been included in the appendix. These tables provide supplemental information to assist the reader in evaluating the data used in an indicator. The appendix tables contain state-level data on the performance of students in different racial/ethnic and gender groups on the National Assessment of Educational Progress evaluations. Additional data on the coefficient of variation for data sources in the chapter also are presented in the appendix tables when they are available.

Reference

Hecker D. 2005. High-technology employment: A NAICS-based update. *Monthly Labor Review* 128(7):57–72.

Table 8-A
2002 NAICS codes that constitute high-technology industries

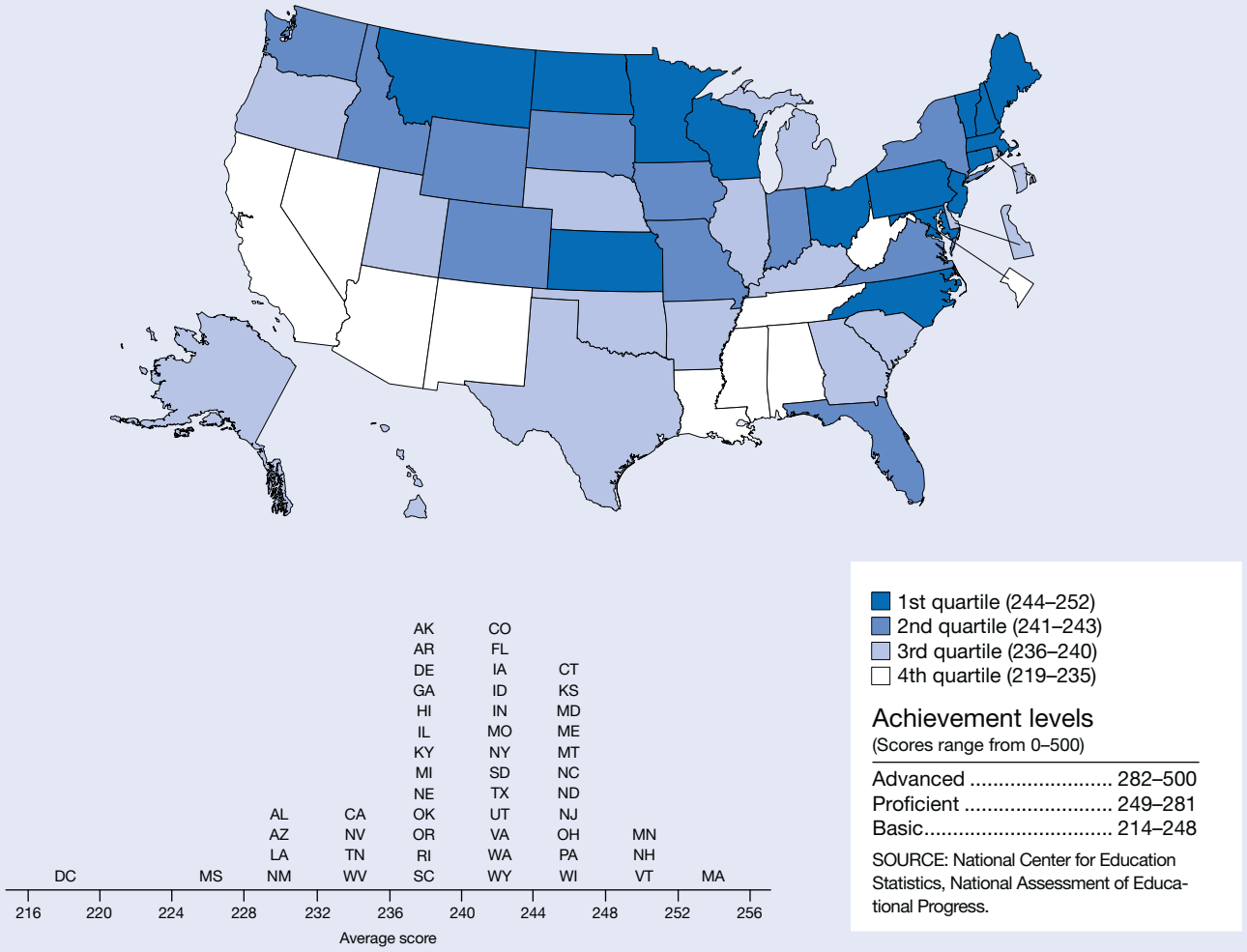
NAICS code	Industry
1131, 1132	Forestry
2111	Oil and gas extraction
2211	Electric power generation, transmission, and distribution
3241	Petroleum and coal products manufacturing
3251	Basic chemical manufacturing
3252	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing
3254	Pharmaceutical and medicine manufacturing
3255	Paint, coating, and adhesive manufacturing
3259	Other chemical product and preparation manufacturing
3332	Industrial machinery manufacturing
3333	Commercial and service industry machinery manufacturing
3336	Engine, turbine, and power transmission equipment manufacturing
3339	Other general purpose machinery manufacturing
3341	Computer and peripheral equipment manufacturing
3342	Communications equipment manufacturing
3343	Audio and video equipment manufacturing
3344	Semiconductor and other electronic component manufacturing
3345	Navigational, measuring, electromedical, and control instruments manufacturing
3346	Manufacturing and reproducing magnetic and optical media
3353	Electrical equipment manufacturing
3364	Aerospace product and parts manufacturing
3369	Other transportation equipment manufacturing
4234	Professional and commercial equipment and supplies, merchant wholesalers
4861	Pipeline transportation of crude oil
4862	Pipeline transportation of natural gas
4869	Other pipeline transportation
5112	Software publishers
5161	Internet publishing and broadcasting
5171	Wired telecommunications carriers
5172	Wireless telecommunications carriers (except satellite)
5173	Telecommunications resellers
5174	Satellite telecommunications
5179	Other telecommunications
5181	Internet service providers and Web search portals
5182	Data processing, hosting, and related services
5211	Monetary authorities, central bank
5232	Securities and commodity exchanges
5413	Architectural, engineering, and related services
5415	Computer systems design and related services
5416	Management, scientific, and technical consulting services
5417	Scientific research and development services
5511	Management of companies and enterprises
5612	Facilities support services
8112	Electronic and precision equipment repair and maintenance

NAICS = North American Industry Classification System

Science and Engineering Indicators 2012

Fourth Grade Mathematics Performance

Figure 8-1
Average fourth grade mathematics performance: 2009



Findings

- In 2009, the nationwide average mathematics score of fourth grade public school students was 239, a significant increase from 224 in 2000. This improvement occurred almost entirely during the initial portion of the decade, with no change in the nationwide average math score between 2007 and 2009.
- The states with the highest average fourth grade performance scores are concentrated in the northern United States.
- The gap in mathematics scores between white and black fourth graders decreased from 30 points to 26 points between 2000 and 2009. The gap in mathematics scores between white and Hispanic fourth graders decreased from 26 points to 21 points between 2000 and 2009. There were no significant changes in either of these gaps between 2007 and 2009.
- The average mathematics scores for both male and female fourth grade students increased over the decade, but the size of the gender gap in fourth grade mathematics scores remained unchanged at 2 points.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its fourth grade students in public schools. The NAEP mathematics assessment is a federally authorized measure of student performance in which all 50 states and the District of Columbia participated in 2009.

Student performance is presented in terms of average scores on a scale from 0 to 500. An average score designated as NA (not available) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-1
Average fourth grade mathematics performance, by state: 2000, 2005, and 2009
(Score out of 500)

State	2000	2005	2009
United States	224*	237*	239
Alabama	217*	225*	228
Alaska	NA	236	237
Arizona	219*	230	230
Arkansas	216*	236	238
California	213*	230	232
Colorado	NA	239	243
Connecticut	234*	242	245
Delaware	NA	240*	239
District of Columbia	192*	211*	219
Florida	NA	239*	242
Georgia	219*	234	236
Hawaii	216*	230*	236
Idaho	224*	242	241
Illinois	223*	233*	238
Indiana	233*	240*	243
Iowa	231*	240*	243
Kansas	232*	246	245
Kentucky	219*	231*	239
Louisiana	218*	230	229
Maine	230*	241	244
Maryland	222*	238	244
Massachusetts	233*	247*	252
Michigan	229*	238	236
Minnesota	234*	246	249
Mississippi	211*	227	227
Missouri	228*	235*	241
Montana	228*	241*	244
Nebraska	225*	238	239
Nevada	220*	230	235
New Hampshire	NA	246*	251
New Jersey	NA	244*	247
New Mexico	213*	224*	230
New York	225*	238*	241
North Carolina	230*	241	244
North Dakota	230*	243*	245
Ohio	230*	242	244
Oklahoma	224*	234*	237
Oregon	224*	238	238
Pennsylvania	NA	241*	244
Rhode Island	224*	233	239
South Carolina	220*	238	236
South Dakota	NA	242	242
Tennessee	220*	232	232
Texas	231*	242	240
Utah	227*	239	240
Vermont	232*	244*	248
Virginia	230*	240*	243
Washington	NA	242	242
West Virginia	223*	231*	233
Wisconsin	NA	241*	244
Wyoming	229*	243	242
Puerto Rico	NA	NA	NA

*significantly different ($p < .05$) from the 2009 score for the jurisdiction; NA = not available

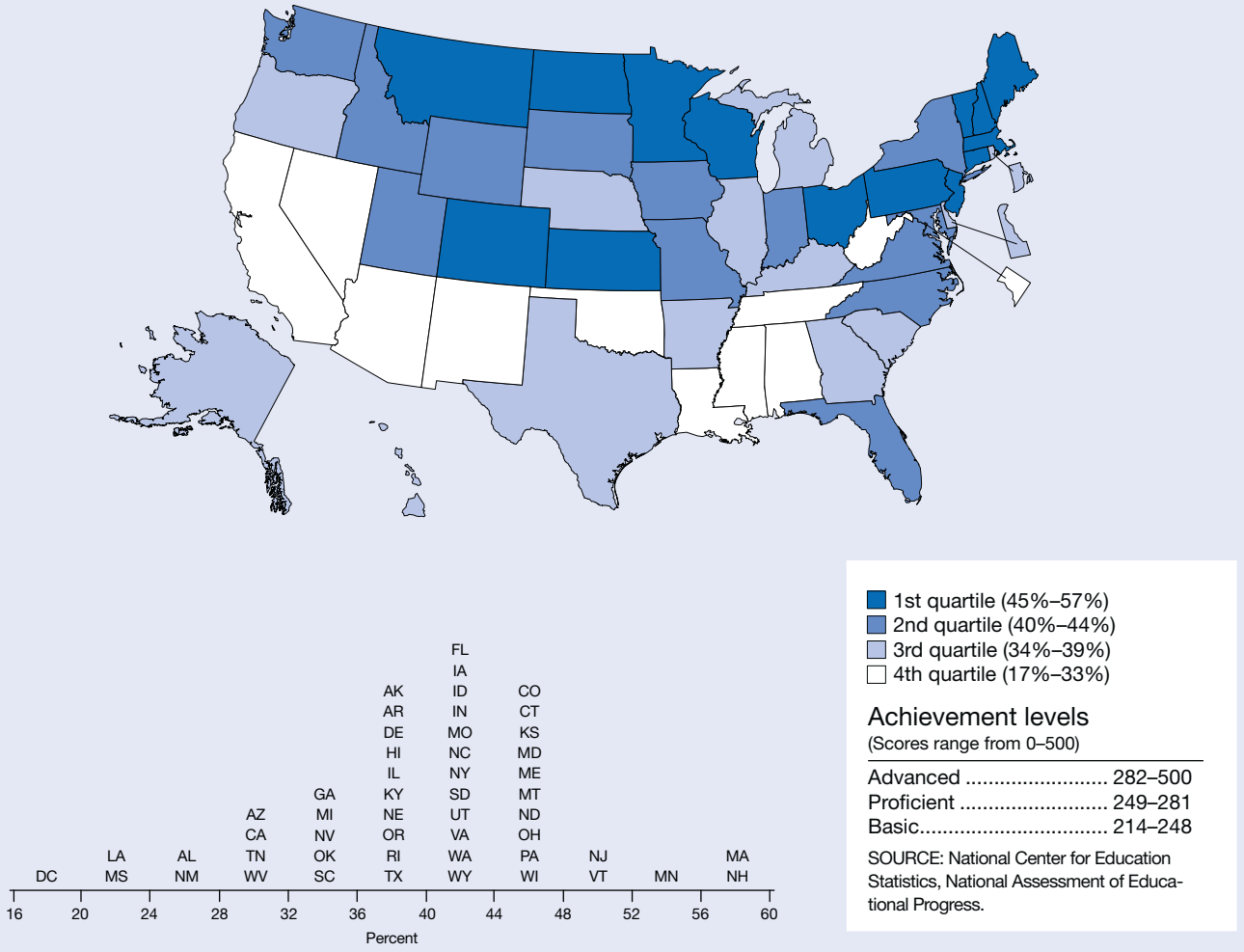
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Fourth Grade Mathematics Proficiency

Figure 8-2
Students reaching proficiency in fourth grade mathematics: 2009
(Percentage of students scoring 249 or above)



Findings

- In 2009, 38% of fourth grade public school students nationwide performed at or above the proficient level in mathematics, which represents a statistically significant increase from 22% in 2000 and 35% in 2005.
- All 41 jurisdictions that participated in both the 2000 and 2009 assessments showed significant increases in mathematics proficiency levels for public school fourth graders in 2009.
- Substantial differences in mathematics proficiency exist among racial/ethnic groups of fourth graders. The gap between white and black students increased from 26% to 35% between 2000 and 2009. The gap between white and Hispanic students increased from 23% to 29% during this period. All racial/ethnic groups showed gains between 2000 and 2009, but at varying rates.
- The gender gap in mathematics proficiency among fourth graders decreased from 5% to 3% between 2000 and 2009. The range by state in 2009 was 17%–59% for males and 17%–55% for females.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in mathematics. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency," as well as "advanced" and "basic" accomplishment. For the fourth grade, the proficient level (scores 249–281) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (282–500) signifies superior performance. The basic level (214–248) denotes partial mastery of knowledge and skills that are prerequisite for proficient work.

Approximately 168,800 fourth grade students in 9,510 schools participated in the 2009 NAEP mathematics assessment.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-2
Students reaching proficiency in fourth grade mathematics, by state: 2000, 2005, and 2009
(Percent)

State	2000	2005	2009
United States	22*	35*	38
Alabama	13*	21*	24
Alaska	NA	34	38
Arizona	16*	28	28
Arkansas	14*	34	36
California	13*	28	30
Colorado	NA	39	45
Connecticut	31*	43	46
Delaware	NA	36*	36
District of Columbia	5*	10*	17
Florida	NA	37*	40
Georgia	17*	30	34
Hawaii	14*	27*	37
Idaho	20*	41	41
Illinois	20*	32*	38
Indiana	30*	38*	42
Iowa	26*	37*	41
Kansas	29*	47	46
Kentucky	17*	26*	37
Louisiana	14*	24	23
Maine	23*	39	45
Maryland	21*	38	44
Massachusetts	31*	49*	57
Michigan	28*	37	35
Minnesota	33*	47	54
Mississippi	9*	19	22
Missouri	23*	31*	41
Montana	24*	38*	45
Nebraska	24*	36	38
Nevada	16*	26*	32
New Hampshire	NA	47*	56
New Jersey	NA	46*	49
New Mexico	12*	19*	26
New York	21*	36*	40
North Carolina	25*	40	43
North Dakota	25*	40*	45
Ohio	25*	43	45
Oklahoma	16*	29	33
Oregon	23*	37	37
Pennsylvania	NA	41*	46
Rhode Island	22*	31*	39
South Carolina	18*	36	34
South Dakota	NA	40	42
Tennessee	18*	28	28
Texas	25*	40	38
Utah	23*	37	41
Vermont	29*	44*	51
Virginia	24*	40	43
Washington	NA	42	43
West Virginia	17*	25*	28
Wisconsin	NA	40*	45
Wyoming	25*	42	40
Puerto Rico	NA	NA	NA

*significantly different ($p < .05$) from the 2009 score for the jurisdiction; NA = not available

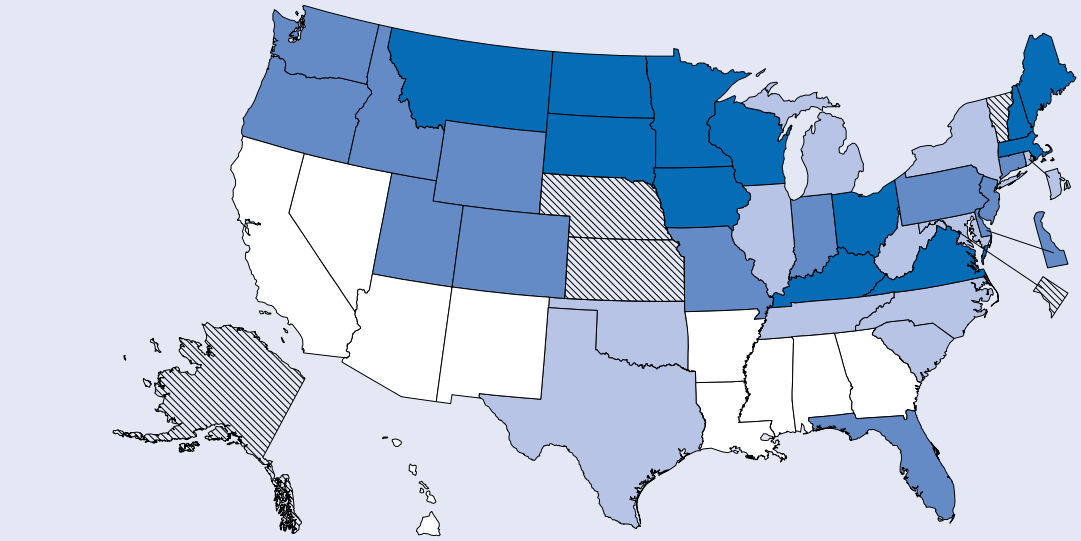
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Fourth Grade Science Performance

Figure 8-3
Average fourth grade science performance: 2009



Findings

- In 2009, the nationwide average science score of fourth grade public school students was 149. Average scores for individual states ranged between 133 and 163.
- Of the 47 states and jurisdictions that participated in the fourth grade science assessment, 24 states had scores that were higher than the national average, 13 were not significantly different, and 10 were lower.
- Nationally, the gap in science scores between white and black public school fourth grade students was 35 points, and the gap between white and Hispanic public fourth grade students was 32 points.
- Male fourth grade public school students scored 1 point higher in science than female fourth grade public school students although females scored higher in life science than did males.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its fourth grade students in public schools. The national science assessment was updated in 2009 to keep pace with key developments in science. It contains questions covering the content areas of physical, life, and earth and space science. The 2009 assessment is based on a new framework, and these results, therefore, cannot be compared to those from previous science assessments. They provide a current snapshot of what fourth graders can do in science and will provide a basis for comparisons for the future.

Student performance is presented in terms of average scores on a scale from 0 to 300 with a mean of 150 and a standard deviation of 35. An average score designated as NA (not available) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-3
Average fourth grade science performance, by state: 2009
(Score out of 300)

State	2009
United States	149
Alabama	143
Alaska	NA
Arizona	138
Arkansas	146
California	136
Colorado	155
Connecticut	156
Delaware	153
District of Columbia	NA
Florida	151
Georgia	144
Hawaii	140
Idaho	154
Illinois	148
Indiana	153
Iowa	157
Kansas	NA
Kentucky	161
Louisiana	141
Maine	160
Maryland	150
Massachusetts	160
Michigan	150
Minnesota	158
Mississippi	133
Missouri	156
Montana	160
Nebraska	NA
Nevada	141
New Hampshire	163
New Jersey	155
New Mexico	142
New York	148
North Carolina	148
North Dakota	162
Ohio	157
Oklahoma	148
Oregon	151
Pennsylvania	154
Rhode Island	150
South Carolina	149
South Dakota	157
Tennessee	148
Texas	148
Utah	154
Vermont	NA
Virginia	162
Washington	151
West Virginia	148
Wisconsin	157
Wyoming	156
Puerto Rico	NA

NA = not available

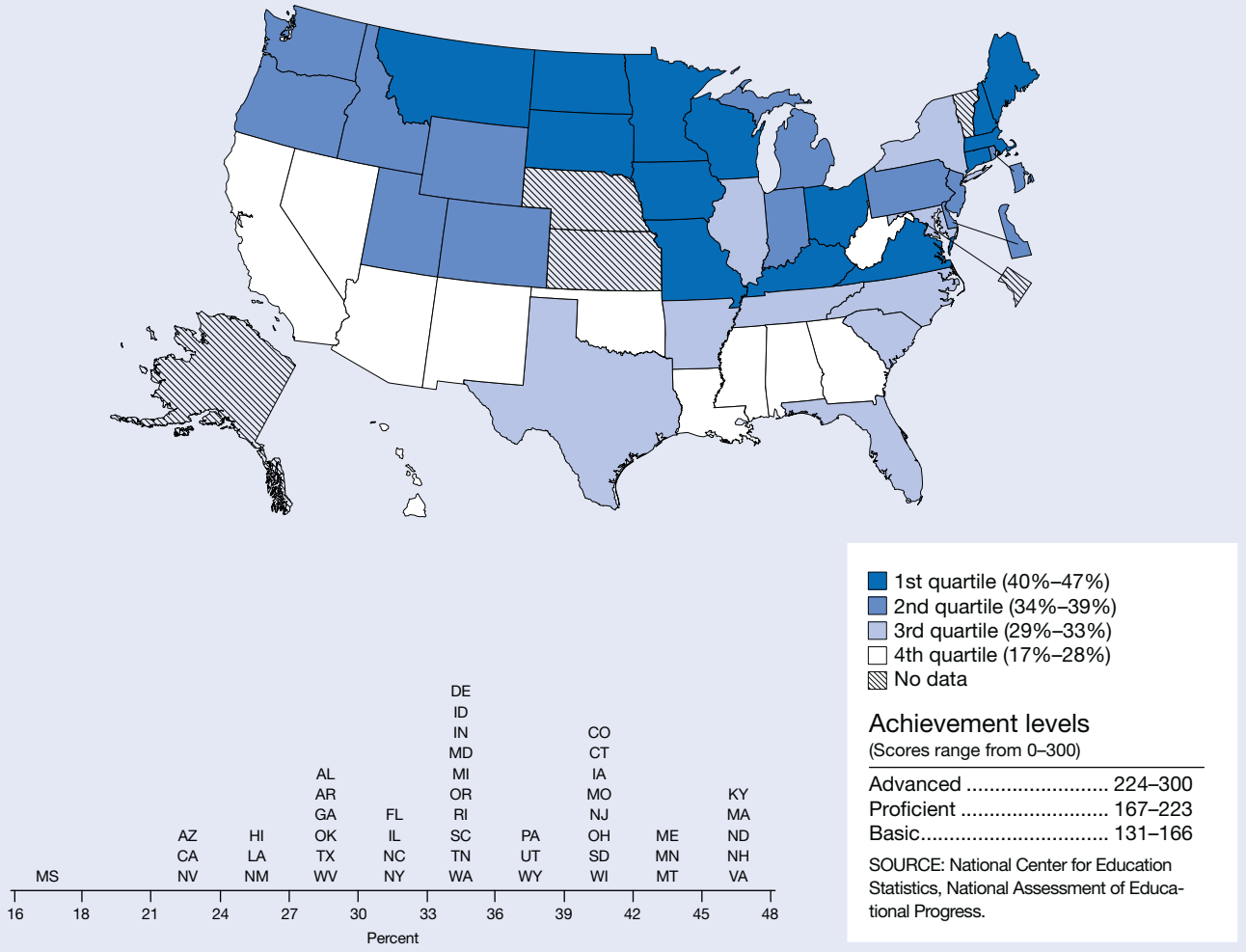
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Fourth Grade Science Proficiency

Figure 8-4
Students reaching proficiency in fourth grade science: 2009
(Percentage of students scoring 167 or above)



Findings

- In 2009, 32% of fourth grade public school students nationwide performed at or above the proficient level in science. Among the states, there were significant differences in the percentage of fourth grade public school students who demonstrated proficiency in science. State values for this indicator ranged from 17% to 47%.
- Nationally, the percentage of fourth grade white students demonstrating proficient performance in science was 46% compared to 13% for Hispanic students and 10% for black students.
- A gender difference was reported with 34% of male fourth grade public school students scoring at or above the proficient level in science compared to 31% of their female counterparts. The range by state was 18%–49% for males and 16%–49% for females.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in science. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency," as well as "advanced" and "basic" accomplishment. For the fourth grade, the proficient level (scores 167–223) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (224–300) signifies superior performance. The basic level (131–166) denotes partial mastery of knowledge and skills that are prerequisite for proficient work.

The National Center for Education Statistics has advised that science achievement levels are to be used on a trial basis and should be interpreted with caution. Approximately 156,500 fourth grade students in 9,330 schools participated in the 2009 NAEP science assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not meet minimum guidelines for reporting. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-4
Students reaching proficiency in fourth grade science, by state: 2009
(Percent)

State	2009
United States	32
Alabama	27
Alaska	NA
Arizona	22
Arkansas	29
California	22
Colorado	39
Connecticut	40
Delaware	34
District of Columbia	NA
Florida	32
Georgia	27
Hawaii	25
Idaho	35
Illinois	32
Indiana	35
Iowa	41
Kansas	NA
Kentucky	45
Louisiana	25
Maine	42
Maryland	33
Massachusetts	45
Michigan	34
Minnesota	43
Mississippi	17
Missouri	40
Montana	43
Nebraska	NA
Nevada	23
New Hampshire	47
New Jersey	39
New Mexico	24
New York	30
North Carolina	30
North Dakota	45
Ohio	41
Oklahoma	28
Oregon	34
Pennsylvania	38
Rhode Island	34
South Carolina	33
South Dakota	40
Tennessee	33
Texas	29
Utah	38
Vermont	NA
Virginia	46
Washington	35
West Virginia	28
Wisconsin	41
Wyoming	37
Puerto Rico	NA

NA = not available

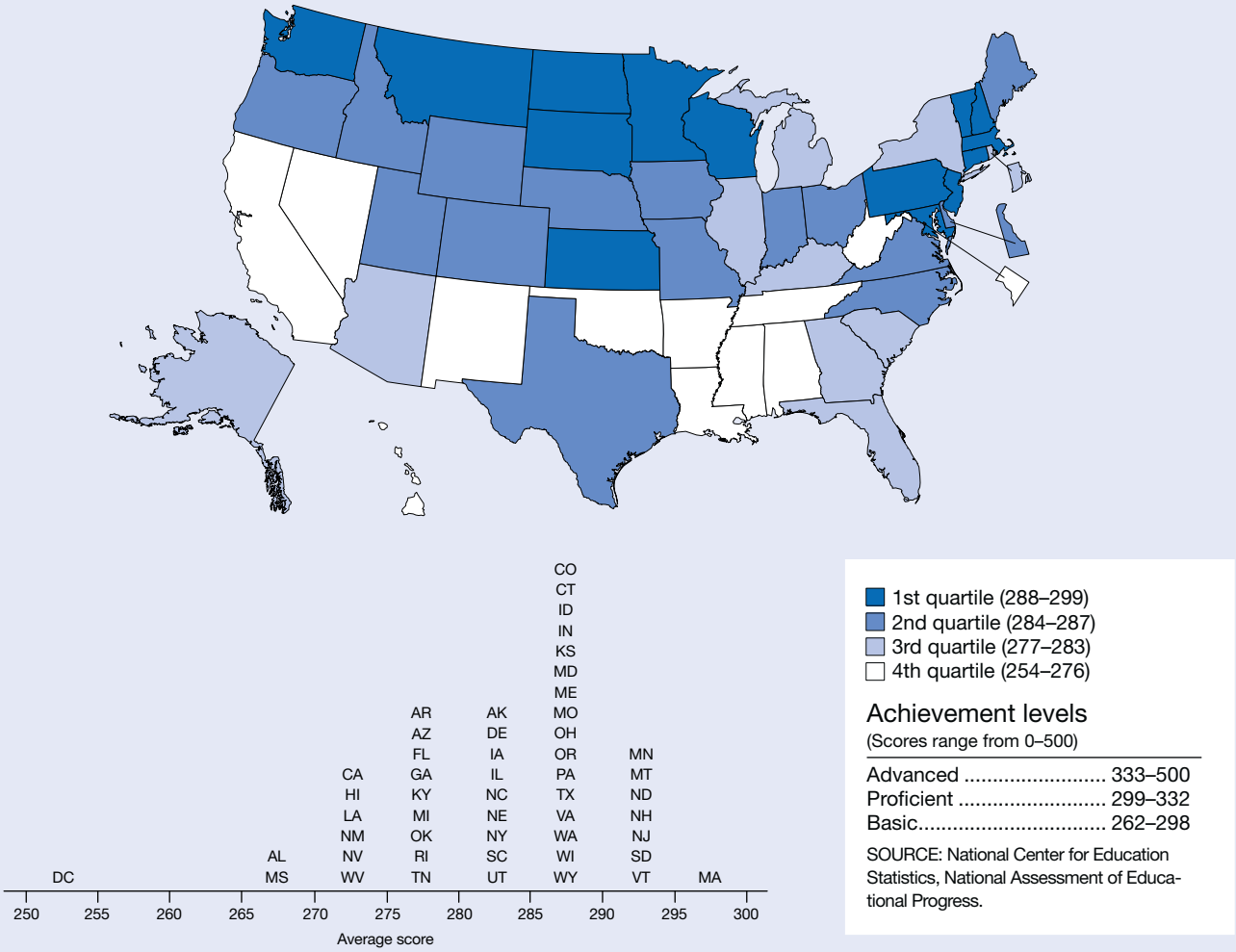
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Eighth Grade Mathematics Performance

Figure 8-5
Average eighth grade mathematics performance: 2009



Findings

- In 2009, the nationwide average mathematics score of eighth grade public school students was 282, a statistically significant increase from 272 in 2000. Eighth graders scored higher in mathematics in 2009 than in any previous assessment year.
- Of the 40 jurisdictions that participated in both the 2000 and 2009 mathematics assessments, 35 showed statistically significant increases over the decade.
- Since 2007, eighth grade mathematics scores increased for public school students in 15 states; nearly half of those states showing an increase were located in the West. No states showed a decline.
- The gaps in mathematics scores between white eighth graders and black or Hispanic eighth graders narrowed between 2000 and 2009 although significant gaps still exist.
- The average mathematics scores for both male and female eighth grade students increased over the decade, but the size of the gender gap remained unchanged at 2 points.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its eighth grade students in public schools. The NAEP mathematics assessment is a federally authorized measure of student performance in which all 50 states and the District of Columbia participated in 2009.

Student performance is presented in terms of average scores on a scale from 0 to 500. An average score designated as NA (not applicable) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-5
Average eighth grade mathematics performance, by state: 2000, 2005, and 2009
(Score out of 500)

State	2000	2005	2009
Average EPSCoR state value	270	275	280
Average non-EPSCoR state value	274	280	284
United States	272 *	278*	282
Alabama	264	262	269
Alaska	NA	279*	283
Arizona	269 *	274	277
Arkansas	257 *	272	276
California	260 *	269	270
Colorado	NA	281*	287
Connecticut	281	281	289
Delaware	NA	281*	284
District of Columbia	235 *	245*	254
Florida	NA	274	279
Georgia	265 *	272	278
Hawaii	262 *	266*	274
Idaho	277 *	281*	287
Illinois	275 *	278	282
Indiana	281 *	282*	287
Iowa	NA	284	284
Kansas	283 *	284*	289
Kentucky	270 *	274*	279
Louisiana	259 *	268*	272
Maine	281 *	281*	286
Maryland	272 *	278*	288
Massachusetts	279 *	292*	299
Michigan	277	277	278
Minnesota	287 *	290	294
Mississippi	254 *	262	265
Missouri	271 *	276*	286
Montana	285	286	292
Nebraska	280 *	284	284
Nevada	265 *	270	274
New Hampshire	NA	285*	292
New Jersey	NA	284*	293
New Mexico	259 *	263*	270
New York	271 *	280	283
North Carolina	276 *	282	284
North Dakota	282 *	287*	293
Ohio	281 *	283	286
Oklahoma	270 *	271*	276
Oregon	280	282	285
Pennsylvania	NA	281*	288
Rhode Island	269 *	272*	278
South Carolina	265 *	281	280
South Dakota	NA	287	291
Tennessee	262 *	271*	275
Texas	273 *	281*	287
Utah	274 *	279	284
Vermont	281 *	287*	293
Virginia	275 *	284*	286
Washington	NA	285	289
West Virginia	266 *	269	270
Wisconsin	NA	285	288
Wyoming	276 *	282*	286
Puerto Rico	NA	NA	NA

*significantly different ($p < .05$) from the 2009 score for the jurisdiction; NA = not available

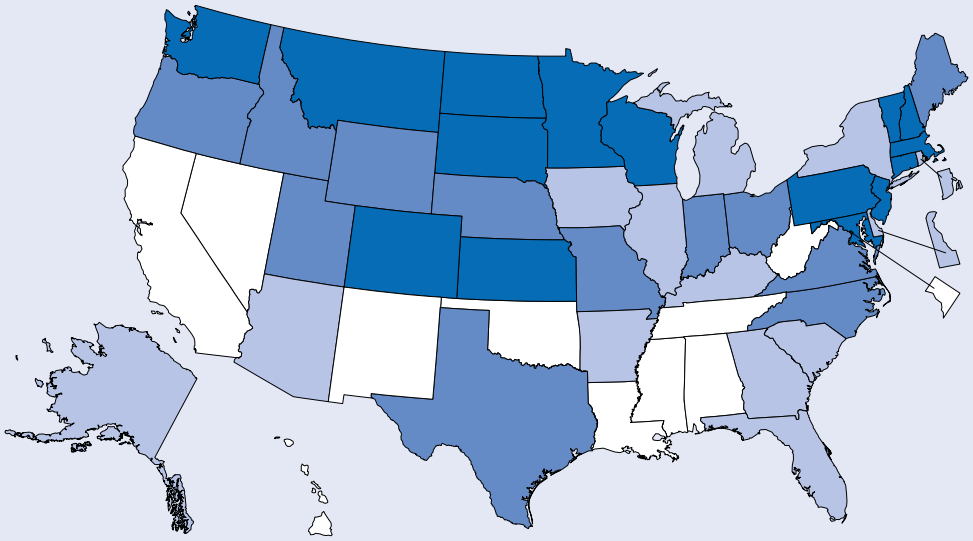
EPSCoR = Experimental Program to Stimulate Competitive Research

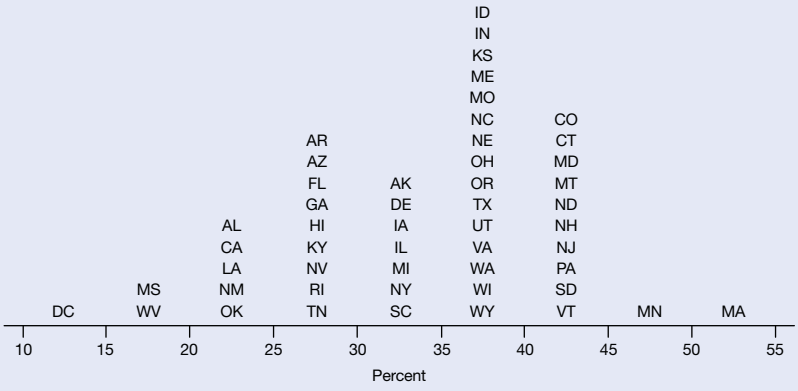
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 mathematics scores for public schools only. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCE: National Center for Education Statistics, NAEP (various years).

Eighth Grade Mathematics Proficiency

Figure 8-6
Students reaching proficiency in eighth grade mathematics: 2009
(Percentage of students scoring 299 or above)





1st quartile (39%–52%)
2nd quartile (35%–38%)
3rd quartile (27%–34%)
4th quartile (11%–25%)

Achievement levels
(Scores range from 0–500)

Advanced	333–500
Proficient	299–332
Basic	262–298

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress.

Findings

- In 2009, 33% of eighth grade public school students nationwide performed at or above the proficient level in mathematics, which represents a significant increase from 25% in 2000 and 28% in 2005. Of the 39 states that participated in both the 2000 and 2009 assessments, 30 showed statistically significant increases in mathematics proficiency among public school eighth graders over the decade. Only eight showed a significant increase from 2007 to 2009.
- Substantial differences in mathematics proficiency exist among racial/ethnic groups of eighth graders even though the gap in performance scores narrowed. The gap between white and black students who are proficient in mathematics increased from 28% to 31% between 2000 and 2009. The gap between white and Hispanic students remained around 25% during this period. All racial/ethnic groups showed gains between 2000 and 2009, but at varying rates.
- The gender gap in mathematics proficiency among eighth graders remained at 3% between 2000 and 2009 although the percentage of proficient students increased for both sexes during this period. The range by state for 2009 was 12%–53% for males and 11%–50% for females.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in mathematics. The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency," as well as "advanced" and "basic" accomplishment. For the eighth grade, the proficient level (scores 299–332) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (333–500) signifies superior performance. The basic level (262–298) denotes partial mastery of knowledge and skills that are prerequisite for proficient work.

Approximately 161,700 eighth grade students in 7,030 schools participated in the 2009 NAEP mathematics assessment. NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-6
Students reaching proficiency in eighth grade mathematics, by state: 2000, 2005, and 2009
(Percent)

State	2000	2005	2009
United States	25*	28*	33
Alabama	16	15	20
Alaska	NA	29	33
Arizona	20*	26	29
Arkansas	13*	22	27
California	17*	22*	23
Colorado	NA	32*	40
Connecticut	33	35	40
Delaware	NA	30	32
District of Columbia	6	7	11
Florida	NA	26	29
Georgia	19*	23	27
Hawaii	16*	18*	25
Idaho	26*	30*	38
Illinois	26*	29	33
Indiana	29*	30*	36
Iowa	NA	34	34
Kansas	34*	34*	39
Kentucky	20*	23*	27
Louisiana	11*	16	20
Maine	30	30*	35
Maryland	27*	30*	40
Massachusetts	30*	43*	52
Michigan	28	29	31
Minnesota	39	43	47
Mississippi	9*	14	15
Missouri	21*	26*	35
Montana	36	36	44
Nebraska	30*	35	35
Nevada	18*	21	25
New Hampshire	NA	35	43
New Jersey	NA	36*	44
New Mexico	12*	14*	20
New York	24*	31	34
North Carolina	27*	32	36
North Dakota	30*	35*	43
Ohio	30*	34	36
Oklahoma	18	20	24
Oregon	31	33	37
Pennsylvania	NA	31*	40
Rhode Island	22*	24*	28
South Carolina	17*	30	30
South Dakota	NA	36	42
Tennessee	16*	21	25
Texas	24*	31*	36
Utah	25*	30	35
Vermont	31*	38*	43
Virginia	25*	33	36
Washington	NA	36	39
West Virginia	17	17	19
Wisconsin	NA	36	39
Wyoming	23*	29*	35
Puerto Rico	NA	NA	NA

*significantly different ($p < .05$) from the 2009 score for the jurisdiction; NA = not available

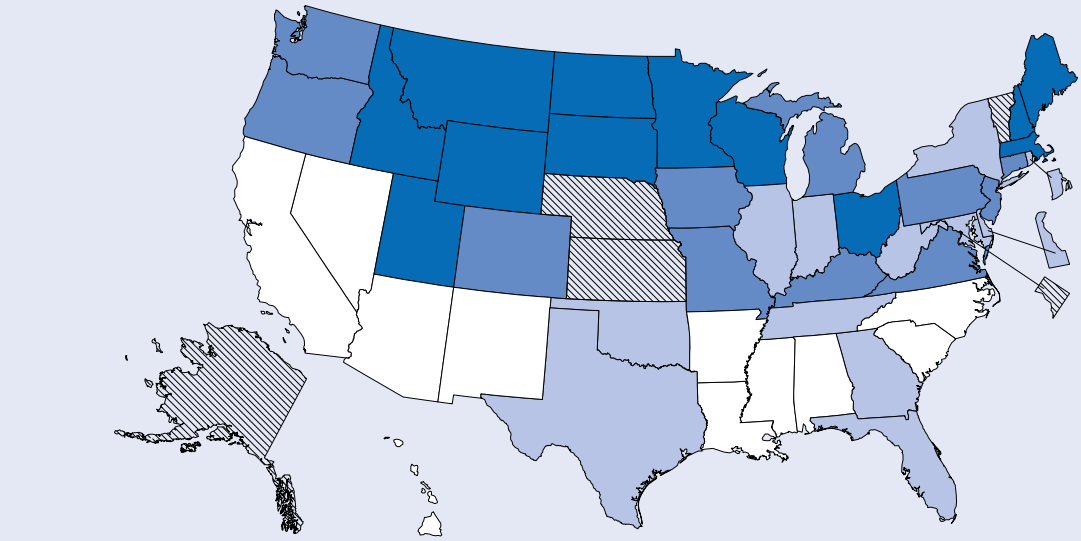
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 mathematics scores for public schools only.

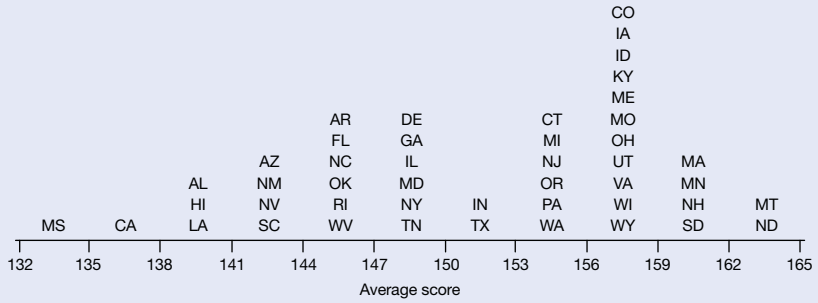
SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Eighth Grade Science Performance

Figure 8-7
Average eighth grade science performance: 2009





1st quartile (157–162)
2nd quartile (153–156)
3rd quartile (145–152)
4th quartile (132–144)
No data

Achievement levels
(Scores range from 0–300)

Advanced	215–300
Proficient	170–214
Basic	141–169

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress.

Findings

- In 2009, the nationwide average science score of eighth grade public school students was 149. Average scores for individual states ranged from a high of 162 to low of 132.
- Of the 47 states and jurisdictions that participated, 25 had scores that were higher than the national average and 15 had scores that were lower.
- Nationally, the science score gap between white and black public school eighth grade students was 36 points, and the gap between white and Hispanic public eighth grade students was 30 points.
- Male eighth grade public school students nationally scored 4 points higher in science than female eighth grade public school students.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its eighth grade students in public schools. The national science assessment was updated in 2009 to keep pace with key developments in science. It contains questions covering the content areas of physical, life, and earth and space science. The 2009 assessment is based on a new framework, therefore, these results cannot be compared to those from previous science assessments. They provide a current snapshot of what eighth graders can do in science and will provide a basis for comparisons for the future.

Student performance is presented in terms of average scores on a scale from 0 to 300 with a mean of 150 and a standard deviation of 35. An average score designated as NA (not applicable) indicates that the state either did not participate in the assessment or did not meet the minimum guidelines for reporting.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-7
Average eighth grade science performance, by state: 2009
(Score out of 300)

State	2009
United States	149
Alabama	139
Alaska	NA
Arizona	141
Arkansas	144
California	137
Colorado	156
Connecticut	155
Delaware	148
District of Columbia	NA
Florida	146
Georgia	147
Hawaii	139
Idaho	158
Illinois	148
Indiana	152
Iowa	156
Kansas	NA
Kentucky	156
Louisiana	139
Maine	158
Maryland	148
Massachusetts	160
Michigan	153
Minnesota	159
Mississippi	132
Missouri	156
Montana	162
Nebraska	NA
Nevada	141
New Hampshire	160
New Jersey	155
New Mexico	143
New York	149
North Carolina	144
North Dakota	162
Ohio	158
Oklahoma	146
Oregon	154
Pennsylvania	154
Rhode Island	146
South Carolina	143
South Dakota	161
Tennessee	148
Texas	150
Utah	158
Vermont	NA
Virginia	156
Washington	155
West Virginia	145
Wisconsin	157
Wyoming	158
Puerto Rico	NA

NA = not available

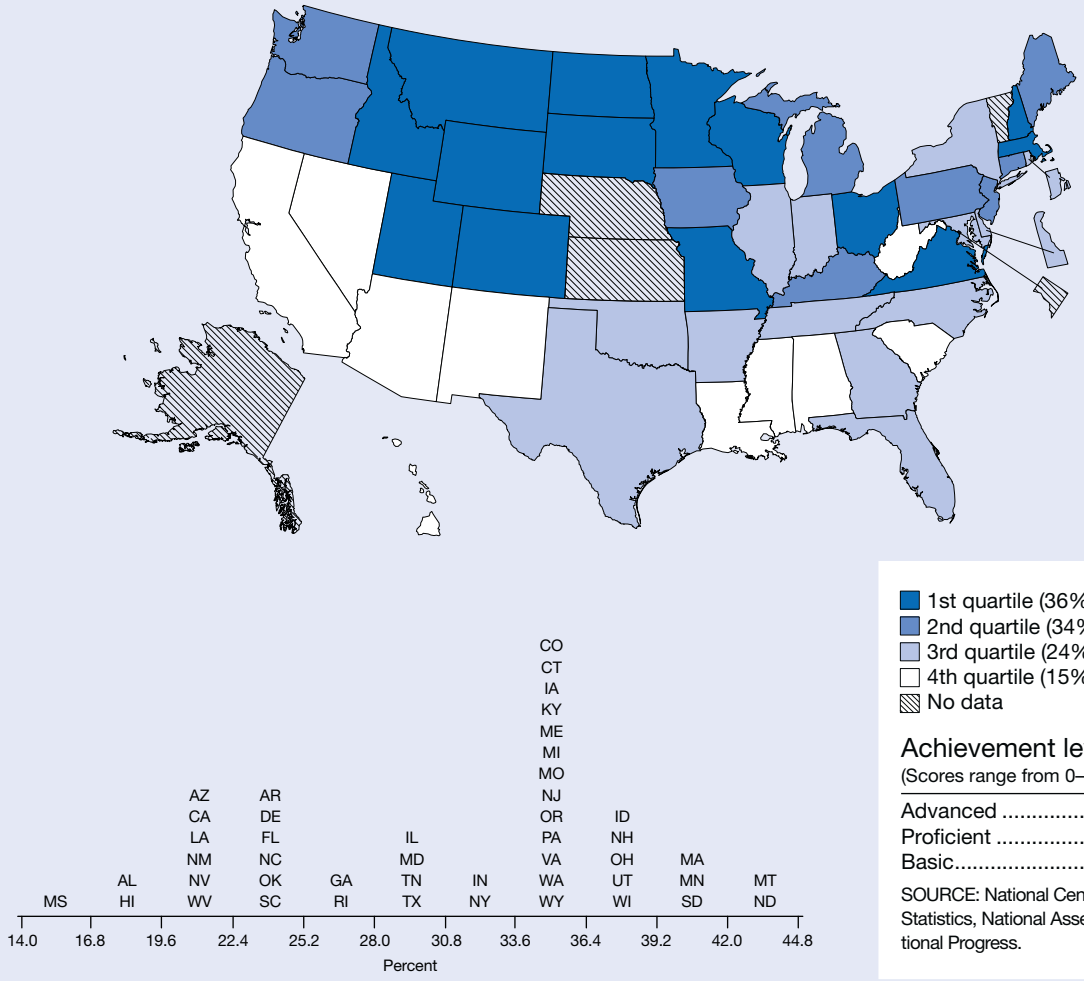
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Eighth Grade Science Proficiency

Figure 8-8
Students reaching proficiency in eighth grade science: 2009
(Percentage of students scoring 170 or above)



Findings

- In 2009, 29% of eighth grade public school students nationwide performed at or above the proficient level in science. Among the states, there were significant differences in the percentage of eighth grade public school students who demonstrated proficiency in science. State values for this indicator ranged from 15% to 43%.
- Nationally, the percentage of eighth grade white students demonstrating proficient performance in science was 41% compared to 12% for Hispanic students and 8% for black students.
- A gender difference was reported with 32% of male eighth grade public school students scoring at or above the proficient level in science compared to 26% of female eighth grade public school students. The range by state was 17%–47% for males and 13%–38% for females.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in science.

The National Assessment Governing Board sets performance standards that provide a context for interpreting National Assessment of Educational Progress (NAEP) results. The standards define "proficiency," as well as "advanced" and "basic" accomplishment. For the eighth grade, the proficient level (scores 170–214) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge. The advanced level (215–300) signifies superior performance. The basic level (141–169) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. The National Center for Education Statistics has determined that achievement levels are to be used on a trial basis and should be interpreted with caution.

Approximately 151,100 eighth grade students in 6,920 schools participated in the 2009 NAEP science assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not meet minimum guidelines for reporting.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-8
Students reaching proficiency in eighth grade science, by state: 2009
(Percent)

State	2009
United States	29
Alabama	19
Alaska	NA
Arizona	22
Arkansas	24
California	20
Colorado	36
Connecticut	35
Delaware	25
District of Columbia	NA
Florida	25
Georgia	27
Hawaii	17
Idaho	37
Illinois	28
Indiana	32
Iowa	35
Kansas	NA
Kentucky	34
Louisiana	20
Maine	35
Maryland	28
Massachusetts	41
Michigan	35
Minnesota	40
Mississippi	15
Missouri	36
Montana	43
Nebraska	NA
Nevada	20
New Hampshire	39
New Jersey	34
New Mexico	21
New York	31
North Carolina	24
North Dakota	42
Ohio	37
Oklahoma	25
Oregon	35
Pennsylvania	35
Rhode Island	26
South Carolina	23
South Dakota	40
Tennessee	28
Texas	29
Utah	39
Vermont	NA
Virginia	36
Washington	34
West Virginia	22
Wisconsin	38
Wyoming	36
Puerto Rico	NA

NA = not available

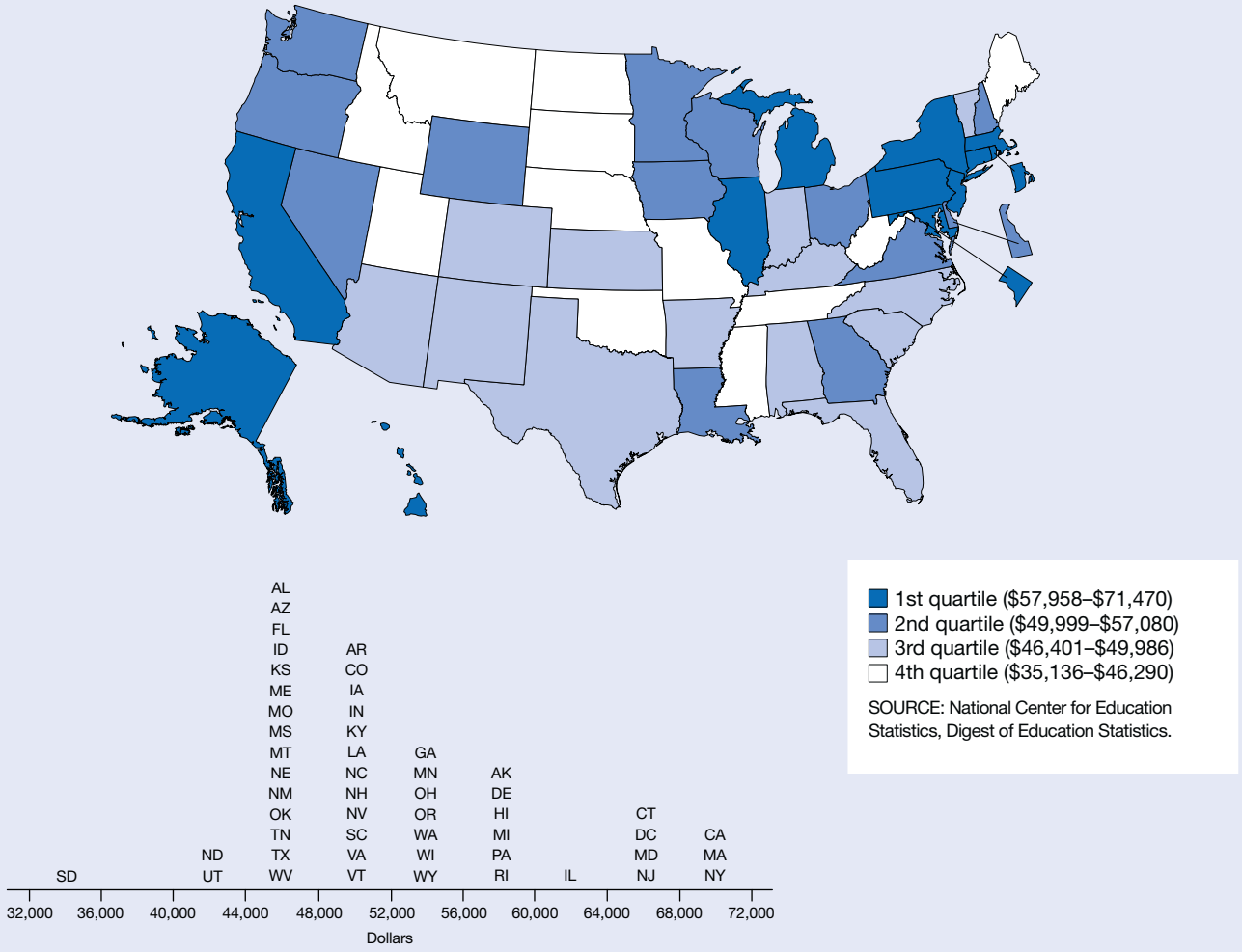
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Science and Engineering Indicators 2012

Public School Teacher Salaries

Figure 8-9
Public school teacher salaries: 2010



Findings

- In 2010, salaries for public school teachers nationwide averaged $52,418, ranging from a state low of $35,136 to a high of $71,470.
- Twenty states and the District of Columbia had average public school teacher salaries higher than the national average in 2010 compared to 22 states plus DC in 2000.
- Between 2000 and 2010, average teacher salaries across the nation rose by 33% in terms of current dollars. Average teacher salaries increased by 5% when expressed in constant dollars.
- States with high salaries for public school teachers do not necessarily have high student achievement scores on the NAEP mathematics and science tests.

This indicator represents the average salary of all full-time public school teachers. The year is the end date of the academic year. For example, 2010 data represent salaries for the 2009–2010 academic year. The figures (given in current dollars) include salaries for teachers with varying amounts of teaching experience and various types and levels of formal education.

Salary estimates for public elementary and secondary teachers are provided by National Education Association, *Estimates of School Statistics, 1969–70 through 2009–10.*

Public school teacher salaries may reflect a range of factors, including the value that the state places on primary and secondary education, the state's cost of living, the teachers' experience and education level, and the local supply and demand in the job market. Relatively low teacher salaries may hinder recruitment into the teaching profession.

Table 8-9
Public school teacher salaries, by state: 2000, 2005, and 2010
(Dollars)

State	2000	2005	2010
United States	39,354	45,089	52,418
Alabama	36,689	38,186	47,156
Alaska	46,462	52,424	59,729
Arizona	36,902	42,905	46,952
Arkansas	33,386	40,495	49,051
California	47,680	57,876	70,458
Colorado	38,163	43,949	49,505
Connecticut	51,780	57,737	64,350
Delaware	44,435	50,595	57,080
District of Columbia	47,076	58,456	64,548
Florida	36,722	41,590	46,912
Georgia	41,023	46,526	54,274
Hawaii	40,578	46,149	58,168
Idaho	35,547	42,122	46,283
Illinois	46,486	55,421	62,077
Indiana	41,850	46,583	49,986
Iowa	35,678	39,284	50,547
Kansas	34,981	39,345	46,957
Kentucky	36,380	40,522	48,354
Louisiana	33,109	39,022	50,349
Maine	35,561	39,610	46,106
Maryland	44,048	52,331	65,333
Massachusetts	46,580	54,679	68,000
Michigan	49,044	56,973	57,958
Minnesota	39,802	46,906	53,069
Mississippi	31,857	36,590	45,644
Missouri	35,656	39,067	45,317
Montana	32,121	38,485	45,759
Nebraska	33,237	39,456	46,080
Nevada	39,390	43,394	51,524
New Hampshire	37,734	43,941	51,365
New Jersey	52,015	56,682	64,809
New Mexico	32,554	39,391	46,401
New York	51,020	56,200	71,470
North Carolina	39,404	43,348	48,648
North Dakota	29,863	36,695	42,964
Ohio	41,436	48,692	55,931
Oklahoma	31,298	37,879	44,143
Oregon	42,336	48,330	55,224
Pennsylvania	48,321	53,258	58,124
Rhode Island	47,041	53,473	59,636
South Carolina	36,081	42,189	48,417
South Dakota	29,071	34,040	35,136
Tennessee	36,328	42,076	46,290
Texas	37,567	41,011	47,157
Utah	34,946	39,456	43,068
Vermont	37,758	44,535	49,053
Virginia	38,744	42,768	49,999
Washington	41,043	45,718	53,653
West Virginia	35,009	38,360	45,959
Wisconsin	41,153	44,299	52,644
Wyoming	34,127	40,497	55,694
Puerto Rico	NA	NA	NA

NA = not available

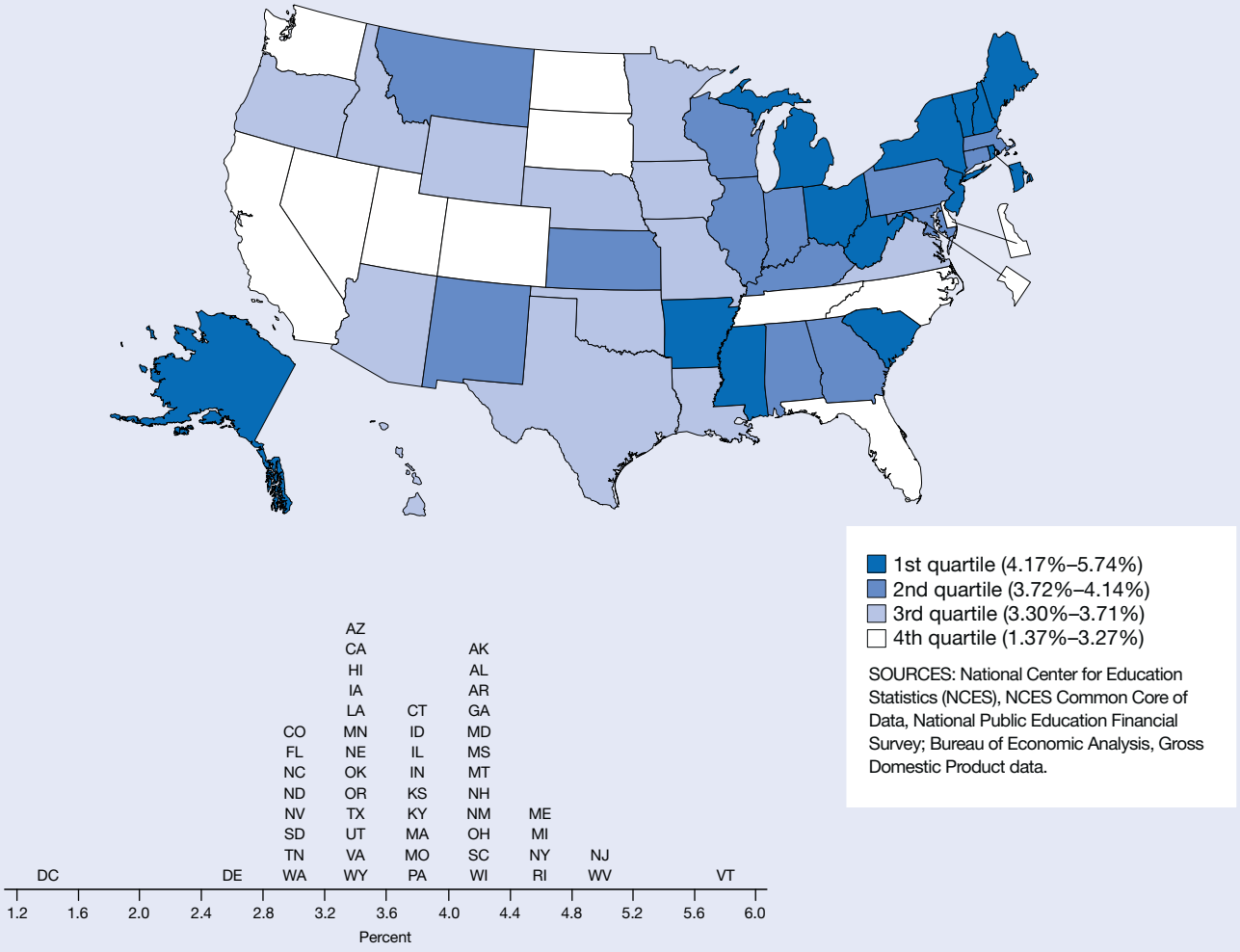
NOTES: National average for United States is reported value from *Digest of Education Statistics*. Average salaries reported in current dollars.

SOURCE: National Center for Education Statistics, *Digest of Education Statistics* (various years).

Science and Engineering Indicators 2012

Elementary and Secondary Public School Current Expenditures as a Percentage of Gross Domestic Product

Figure 8-10
Elementary and secondary public school current expenditures as a percentage of gross domestic product: 2009



Findings

- The 2009 national average for spending on elementary and secondary education was 3.70% of the gross domestic product (GDP), an increase from 3.32% in 2000. Among individual states, the value for this indicator ranged from 2.50% to 5.74% of the state's GDP in 2009, indicating that some states were directing a much higher percentage of their resources toward elementary and secondary education.
- Spending for elementary and secondary public education as a percentage of the state's GDP decreased in 9 states during the 2000-2009 period.
- Several states spending the highest percentage of their GDP on elementary and secondary education tended to have relatively small student populations (100,000-300,000 students), indicating that some level of state spending may be required regardless of the size of the student population or the GDP.

This indicator represents the relative amount of resources that state governments expend to support public education in prekindergarten through grade 12. It is calculated by dividing a state's current expenditures for elementary and secondary public schools by the state's gross domestic product (GDP). Current expenditures include instruction and instruction-related costs, student support services, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education. State and local support represent the largest sources of funding for elementary and secondary education.

Expenditure data on public elementary and secondary education are reported by the National Center for Education Statistics, Department of Education. They are part of the National Public Education Financial Survey and are included in the 2009 Common Core of Data, a comprehensive annual national statistical database that covers approximately 104,000 public elementary and secondary schools and 13,800 regular school districts in the United States.

Current expenditures are expressed in actual dollars and their data year is the end date of the academic year. For example, current expenditure data for 2009 represent expenditures for the 2008–09 academic year. GDP data refer to the 2009 calendar year in current dollars.

Table 8-10
Elementary and secondary public school current expenditures as a percentage of gross domestic product, by state: 2000, 2005, and 2009

State	Public school expenditures ($thousands)			State GDP ($millions)			School expenditures/ GDP (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	323,808,910	425,047,568	518,997,426	9,884,171	12,554,535	14,014,842	3.28	3.39	3.70
Alabama	4,176,082	5,164,406	6,683,843	116,014	151,096	166,819	3.60	3.42	4.01
Alaska	1,183,499	1,442,269	2,006,114	25,913	37,824	45,861	4.57	3.81	4.37
Arizona	4,262,182	6,579,957	8,625,276	161,901	222,968	249,711	2.63	2.95	3.45
Arkansas	2,380,331	3,546,999	4,240,839	68,146	88,227	98,795	3.49	4.02	4.29
California	38,129,479	50,918,654	60,080,929	1,317,343	1,691,991	1,847,048	2.89	3.01	3.25
Colorado	4,400,888	5,994,440	7,187,267	171,930	217,412	250,664	2.56	2.76	2.87
Connecticut	5,402,868	7,080,396	8,708,294	163,943	197,055	227,550	3.30	3.59	3.83
Delaware	937,630	1,299,349	1,518,786	40,957	54,749	60,660	2.29	2.37	2.50
District of Columbia	780,192	1,067,500	1,352,905	58,269	82,837	98,892	1.34	1.29	1.37
Florida	13,885,988	19,042,877	23,328,028	481,115	680,277	732,782	2.89	2.80	3.18
Georgia	9,158,624	12,528,856	15,976,945	294,479	363,154	394,117	3.11	3.45	4.05
Hawaii	1,213,695	1,648,086	2,225,437	41,372	56,869	65,428	2.93	2.90	3.40
Idaho	1,302,817	1,618,215	1,957,740	36,091	48,675	53,661	3.61	3.32	3.65
Illinois	14,462,773	18,658,428	23,495,271	474,444	569,544	631,970	3.05	3.28	3.72
Indiana	7,110,930	9,108,931	9,680,895	198,020	239,575	259,894	3.59	3.80	3.72
Iowa	3,264,336	3,808,200	4,731,463	93,287	120,258	136,062	3.50	3.17	3.48
Kansas	2,971,814	3,718,153	4,805,310	85,742	105,164	122,544	3.47	3.54	3.92
Kentucky	3,837,794	4,812,591	5,886,890	113,108	139,336	155,789	3.39	3.45	3.78
Louisiana	4,391,214	5,554,766	7,276,651	131,430	197,163	205,117	3.34	2.82	3.55
Maine	1,604,438	2,056,266	2,350,447	36,395	45,587	50,039	4.41	4.51	4.70
Maryland	6,545,135	8,682,586	11,591,965	182,953	248,139	285,116	3.58	3.50	4.07
Massachusetts	8,511,065	11,357,857	13,942,586	272,680	323,301	360,538	3.12	3.51	3.87
Michigan	13,994,294	16,353,921	17,217,584	336,786	375,260	369,671	4.16	4.36	4.66
Minnesota	6,140,442	7,310,284	9,270,281	188,449	238,367	258,499	3.26	3.07	3.59
Mississippi	2,510,376	3,243,888	3,967,232	65,615	81,500	94,406	3.83	3.98	4.20
Missouri	5,655,531	7,115,207	8,827,224	180,982	216,633	237,955	3.12	3.28	3.71
Montana	994,770	1,193,182	1,436,062	21,629	30,088	34,999	4.60	3.97	4.10
Nebraska	1,926,500	2,512,914	3,053,575	57,233	72,504	86,411	3.37	3.47	3.53
Nevada	1,875,467	2,722,264	3,606,035	75,907	114,771	125,037	2.47	2.37	2.88
New Hampshire	1,418,503	2,021,144	2,490,623	44,067	53,653	59,086	3.22	3.77	4.22
New Jersey	13,327,645	19,669,576	23,589,224	349,334	429,985	471,946	3.82	4.57	5.00
New Mexico	1,890,274	2,554,638	3,186,252	50,262	67,776	76,871	3.76	3.77	4.14
New York	28,433,240	38,866,853	48,635,363	770,621	961,941	1,094,104	3.69	4.04	4.45
North Carolina	7,713,293	9,835,550	12,470,470	281,418	354,973	407,032	2.74	2.77	3.06
North Dakota	638,946	832,157	928,528	18,250	24,672	31,626	3.50	3.37	2.94
Ohio	12,974,575	17,167,866	19,397,511	381,175	444,715	462,015	3.40	3.86	4.20
Oklahoma	3,382,581	4,161,024	5,082,062	91,292	120,662	142,388	3.71	3.45	3.57
Oregon	3,896,287	4,458,028	5,529,831	112,974	143,349	167,481	3.45	3.11	3.30
Pennsylvania	14,120,112	18,711,100	21,831,816	395,811	482,324	546,538	3.57	3.88	3.99
Rhode Island	1,393,143	1,825,900	2,139,317	33,522	44,169	47,470	4.16	4.13	4.51
South Carolina	4,087,355	5,312,739	6,626,763	115,392	141,929	158,786	3.54	3.74	4.17
South Dakota	737,998	916,563	1,080,054	24,009	31,641	38,255	3.07	2.90	2.82
Tennessee	4,931,734	6,446,691	7,768,052	177,582	224,522	243,849	2.78	2.87	3.19
Texas	25,098,703	31,919,107	40,688,181	732,987	970,997	1,146,647	3.42	3.29	3.55
Utah	2,102,655	2,627,022	3,638,775	69,483	90,748	111,301	3.03	2.89	3.27
Vermont	870,198	1,177,478	1,413,329	18,033	22,773	24,625	4.83	5.17	5.74
Virginia	7,757,598	10,705,162	13,505,290	261,894	356,852	409,732	2.96	3.00	3.30
Washington	6,399,883	7,870,979	9,940,056	227,828	279,405	331,639	2.81	2.82	3.00
West Virginia	2,086,937	2,527,767	3,059,420	41,419	51,964	61,043	5.04	4.86	5.01
Wisconsin	6,852,178	8,435,359	9,696,228	177,638	218,923	239,613	3.86	3.85	4.05
Wyoming	683,918	863,423	1,268,407	17,047	26,238	36,760	4.01	3.29	3.45
Puerto Rico	2,086,414	2,865,945	3,502,757	69,208	86,157	NA	3.01	3.33	NA

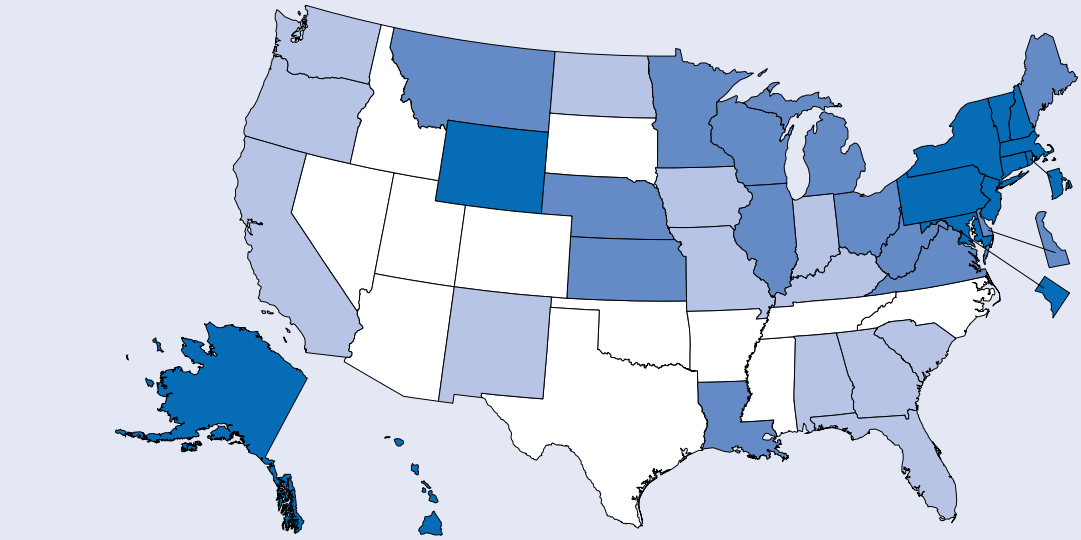
GDP = gross domestic product; NA = not available

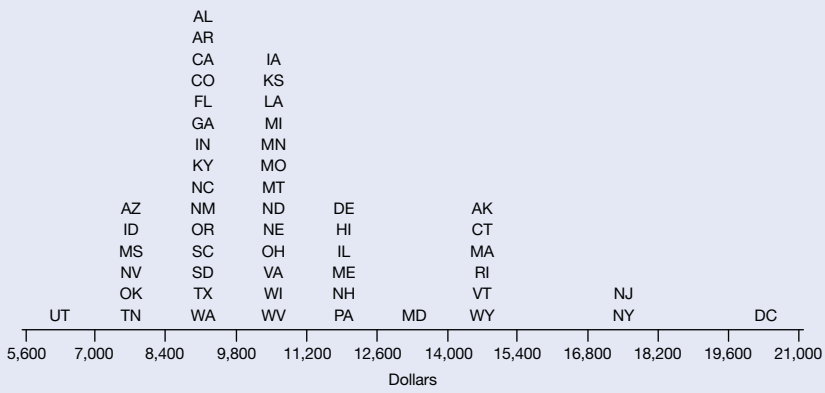
NOTE: GDP reported in current dollars.

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, National Public Education Financial Survey (various years); Bureau of Economic Analysis, Gross Domestic Product data (various years); Government of Puerto Rico, Office of the Governor (various years); United Nations Statistics Division.

Current Expenditures per Pupil for Elementary and Secondary Public Schools

Figure 8-11
Current expenditures per pupil for elementary and secondary public schools: 2009





1st quartile ($12,299–$19,698)
2nd quartile ($10,189–$12,183)
3rd quartile ($8,867–$10,055)
4th quartile ($6,612–$8,854)

SOURCE: National Center for Education Statistics (NCES), NCES Common Core of Data, State Nonfiscal Survey of Public Elementary/Secondary Education, National Public Education Financial Survey.

Findings

- Per-pupil spending on day-to-day operations grew nationwide in current dollars from $6,911 in 2000 to $10,591 in 2009, an increase of 53% in unadjusted dollars. This was equivalent to an increase of approximately 23% after adjusting for inflation.
- In 2009, all states showed substantial increases in per-pupil spending relative to 2000, and only 1 state did not exceed the 2000 national average, compared with 30 states in 2000.
- Per-pupil spending in individual states varied widely, ranging from a low of $6,612 to a high of $17,746 in 2009.
- Several states that ranked in the lower two quartiles of this indicator ranked in the upper quartiles of the National Assessment of Educational Progress indicators

This indicator represents the amount that local, state, and federal governments spend on elementary and secondary education, adjusted for the size of the student body. It is calculated by dividing the current expenditures over the entire academic year for prekindergarten through grade 12 by the number of students in those grades in public schools. Current expenditures include expenditures for instruction and instruction-related costs, student support services, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education. The number of pupils enrolled in prekindergarten through grade 12 is determined during the fall of the academic year. Expenditures represent actual spending in current dollars and have not been adjusted for inflation or for the cost of living in a state, which could affect the amount of goods and services that can be purchased.

During the 2008–09 school year, 65.8% of current expenses were used for instructional costs, 18.0% for operational costs, 10.8% for administrative costs, and 5.4% for student support services.

The year is the end date of the academic year. For example, data for 2009 represent costs for the 2008–09 academic year.

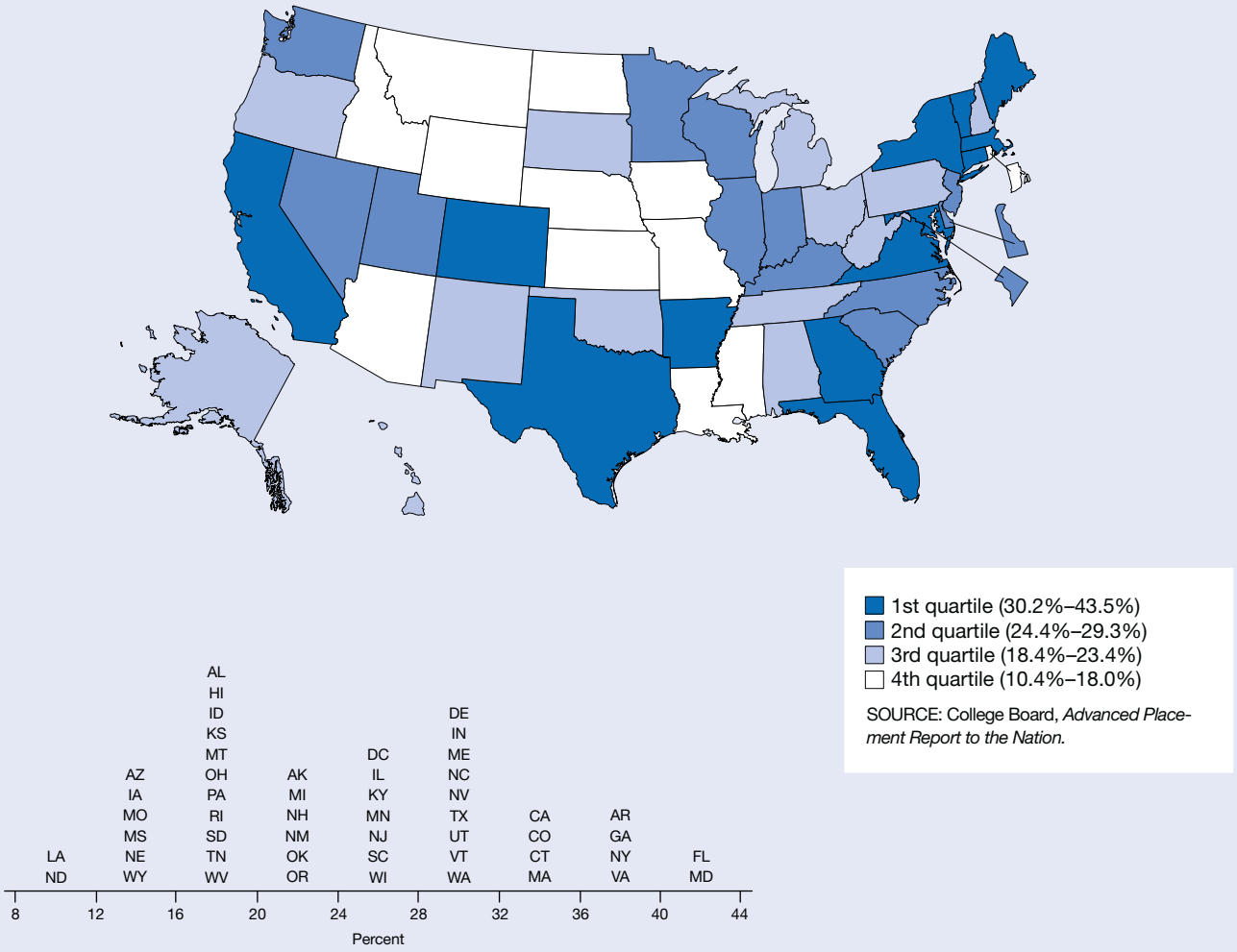
Table 8-11
Current expenditures per pupil for elementary and secondary public schools, by state: 2000, 2005, and 2009

State	Public school expenditures ($thousands)			Student enrollment			Per-pupil expenditures ($)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	323,808,910	425,047,568	518,997,426	46,857,149	48,794,911	49,003,001	6,911	8,711	10,591
Alabama	4,176,082	5,164,406	6,683,843	740,732	730,140	739,198	5,638	7,073	9,042
Alaska	1,183,499	1,442,269	2,006,114	134,391	132,970	130,662	8,806	10,847	15,353
Arizona	4,262,182	6,579,957	8,625,276	852,612	1,043,298	1,087,817	4,999	6,307	7,929
Arkansas	2,380,331	3,546,999	4,240,839	451,034	463,115	478,965	5,277	7,659	8,854
California	38,129,479	50,918,654	60,080,929	6,038,590	6,441,557	6,322,528	6,314	7,905	9,503
Colorado	4,400,888	5,994,440	7,187,267	708,109	765,976	818,443	6,215	7,826	8,782
Connecticut	5,402,868	7,080,396	8,708,294	553,993	577,390	567,198	9,753	12,263	15,353
Delaware	937,630	1,299,349	1,518,786	112,836	119,091	125,430	8,310	10,911	12,109
District of Columbia	780,192	1,067,500	1,352,905	77,194	76,714	68,681	10,107	13,915	19,698
Florida	13,885,988	19,042,877	23,328,028	2,381,396	2,639,336	2,631,020	5,831	7,215	8,867
Georgia	9,158,624	12,528,856	15,976,945	1,422,762	1,553,437	1,655,792	6,437	8,065	9,649
Hawaii	1,213,695	1,648,086	2,225,437	185,860	183,185	179,478	6,530	8,997	12,399
Idaho	1,302,817	1,618,215	1,957,740	245,136	256,084	275,051	5,315	6,319	7,118
Illinois	14,462,773	18,658,428	23,495,271	2,027,600	2,097,503	2,026,925	7,133	8,896	11,592
Indiana	7,110,930	9,108,931	9,680,895	988,702	1,021,348	1,046,147	7,192	8,919	9,254
Iowa	3,264,336	3,808,200	4,731,463	497,301	478,319	470,537	6,564	7,962	10,055
Kansas	2,971,814	3,718,153	4,805,310	472,188	469,136	471,060	6,294	7,926	10,201
Kentucky	3,837,794	4,812,591	5,886,890	648,180	674,796	651,370	5,921	7,132	9,038
Louisiana	4,391,214	5,554,766	7,276,651	756,579	724,281	684,873	5,804	7,669	10,625
Maine	1,604,438	2,056,266	2,350,447	209,253	198,820	192,935	7,667	10,342	12,183
Maryland	6,545,135	8,682,586	11,591,965	846,582	865,561	843,861	7,731	10,031	13,737
Massachusetts	8,511,065	11,357,857	13,942,586	971,425	975,574	958,910	8,761	11,642	14,540
Michigan	13,994,294	16,353,921	17,217,584	1,725,639	1,750,919	1,659,921	8,110	9,340	10,373
Minnesota	6,140,442	7,310,284	9,270,281	854,034	838,503	836,048	7,190	8,718	11,088
Mississippi	2,510,376	3,243,888	3,967,232	500,716	495,376	491,962	5,014	6,548	8,064
Missouri	5,655,531	7,115,207	8,827,224	914,110	905,449	892,436	6,187	7,858	9,891
Montana	994,770	1,193,182	1,436,062	157,556	146,705	140,936	6,314	8,133	10,189
Nebraska	1,926,500	2,512,914	3,053,575	288,261	285,761	281,544	6,683	8,794	10,846
Nevada	1,875,467	2,722,264	3,606,035	325,610	400,083	433,371	5,760	6,804	8,321
New Hampshire	1,418,503	2,021,144	2,490,623	206,783	206,852	197,934	6,860	9,771	12,583
New Jersey	13,327,645	19,669,576	23,589,224	1,289,256	1,393,347	1,381,420	10,337	14,117	17,076
New Mexico	1,890,274	2,554,638	3,186,252	324,495	326,102	330,245	5,825	7,834	9,648
New York	28,433,240	38,866,853	48,635,363	2,887,776	2,836,337	2,740,592	9,846	13,703	17,746
North Carolina	7,713,293	9,835,550	12,470,470	1,275,925	1,385,754	1,463,967	6,045	7,098	8,518
North Dakota	638,946	832,157	928,528	112,751	100,513	94,728	5,667	8,279	9,802
Ohio	12,974,575	17,167,866	19,397,511	1,836,554	1,840,032	1,779,290	7,065	9,330	10,902
Oklahoma	3,382,581	4,161,024	5,082,062	627,032	629,476	645,108	5,395	6,610	7,878
Oregon	3,896,287	4,458,028	5,529,831	545,033	552,322	575,393	7,149	8,071	9,611
Pennsylvania	14,120,112	18,711,100	21,831,816	1,816,716	1,828,089	1,775,029	7,772	10,235	12,299
Rhode Island	1,393,143	1,825,900	2,139,317	156,454	156,498	145,342	8,904	11,667	14,719
South Carolina	4,087,355	5,312,739	6,626,763	666,780	703,736	718,113	6,130	7,549	9,228
South Dakota	737,998	916,563	1,080,054	131,037	122,798	126,429	5,632	7,464	8,543
Tennessee	4,931,734	6,446,691	7,768,052	916,202	941,091	971,950	5,383	6,850	7,992
Texas	25,098,703	31,919,107	40,688,181	3,991,783	4,405,215	4,752,148	6,288	7,246	8,562
Utah	2,102,655	2,627,022	3,638,775	480,255	503,607	550,298	4,378	5,216	6,612
Vermont	870,198	1,177,478	1,413,329	104,559	98,352	93,625	8,323	11,972	15,096
Virginia	7,757,598	10,705,162	13,505,290	1,133,994	1,204,739	1,235,795	6,841	8,886	10,928
Washington	6,399,883	7,870,979	9,940,056	1,003,714	1,020,005	1,026,023	6,376	7,717	9,688
West Virginia	2,086,937	2,527,767	3,059,420	291,811	280,129	282,729	7,152	9,024	10,821
Wisconsin	6,852,178	8,435,359	9,696,228	877,753	864,757	867,035	7,806	9,755	11,183
Wyoming	683,918	863,423	1,268,407	92,105	84,733	86,709	7,425	10,190	14,628
Puerto Rico	2,086,414	2,865,945	3,502,757	613,019	575,648	503,635	3,404	4,979	6,955

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, State Nonfiscal Survey of Public Elementary/Secondary Education (various years); National Public Education Financial Survey (various years).

Percentage of Public High School Students Taking Advanced Placement Exams

Figure 8-12
Percentage of public high school students taking Advanced Placement Exams: 2010



Findings

- Nationwide, the percentage of public school students who took an AP Exam rose from 15.9% of the class of 2000 to 28.3% of the class of 2010.
- The percentage of public school students taking an AP Exam varied greatly among states and ranged from 10.4% to 43.5% of the class of 2010. Forty-two states and the District of Columbia exceeded the 2000 national average in 2010, compared with 15 states and the District of Columbia that exceeded the national average in 2000.
- AP participation levels were higher for all jurisdictions in 2010 than in 2000. Arkansas showed the largest increase, with the class of 2010 exceeding the participation of the class of 2000 by more than 28 percentage points.

Participation in the Advanced Placement (AP) program provides a measure of the extent to which a rigorous curriculum is available to and used by high school students. This indicator represents the percentage of students in the graduating class who have taken one or more AP Exams.

Throughout the United States, nearly 853,000 public school students from the class of 2010 took nearly 2.5 million AP Exams during their high school careers. Generally, students who take AP Exams have completed a rigorous course of study in a specific subject area in high school with the expectation of obtaining college credit or advanced placement. AP Exams were taken most frequently in U.S. history, English literature and composition, English language and composition, calculus AB, and U.S. government and politics.

Students from the class of 2010 attended 12,705 U.S. public schools that participated in the AP program. These schools make an average of 10 different AP courses available to their students.

Table 8-12
Public high school students taking Advanced Placement Exams, by state: 2000, 2005, and 2010
(Percent)

State	2000	2005	2010
United States	15.9	22.7	28.3
Alabama	7.2	9.7	19.5
Alaska	15.4	18.8	22.3
Arizona	11.3	14.6	15.6
Arkansas	8.1	24.0	36.6
California	22.2	30.2	34.0
Colorado	18.6	26.7	34.6
Connecticut	19.1	26.0	32.2
Delaware	13.3	24.8	28.1
District of Columbia	17.3	27.0	25.1
Florida	22.7	32.9	43.5
Georgia	17.2	24.4	37.3
Hawaii	10.6	16.5	19.6
Idaho	9.6	14.3	16.3
Illinois	13.4	19.8	26.3
Indiana	11.9	18.4	29.3
Iowa	6.9	10.2	14.4
Kansas	7.0	9.8	16.0
Kentucky	10.6	17.1	24.4
Louisiana	3.2	4.9	11.4
Maine	14.8	22.3	31.6
Maryland	20.2	31.5	43.4
Massachusetts	19.6	26.2	33.2
Michigan	13.9	18.0	23.2
Minnesota	13.4	17.6	26.4
Mississippi	5.6	8.7	14.1
Missouri	5.5	9.2	13.4
Montana	10.1	15.2	18.0
Nebraska	5.0	7.3	12.4
Nevada	15.1	20.3	28.3
New Hampshire	13.3	17.6	22.7
New Jersey	17.9	23.0	25.6
New Mexico	11.1	18.0	22.3
New York	27.3	34.8	38.0
North Carolina	19.7	29.7	28.8
North Dakota	5.9	8.8	10.4
Ohio	11.3	16.4	18.9
Oklahoma	9.5	17.7	20.8
Oregon	10.5	16.4	23.4
Pennsylvania	12.4	15.7	19.7
Rhode Island	10.7	12.4	17.9
South Carolina	17.7	21.6	26.8
South Dakota	9.6	14.1	18.4
Tennessee	10.4	15.1	18.6
Texas	16.6	25.1	30.2
Utah	24.5	29.1	28.4
Vermont	16.6	22.7	31.8
Virginia	25.0	30.1	38.1
Washington	11.5	21.1	28.0
West Virginia	8.4	12.0	18.4
Wisconsin	15.2	21.1	26.3
Wyoming	6.1	11.4	15.7
Puerto Rico	NA	NA	NA

NA = not available

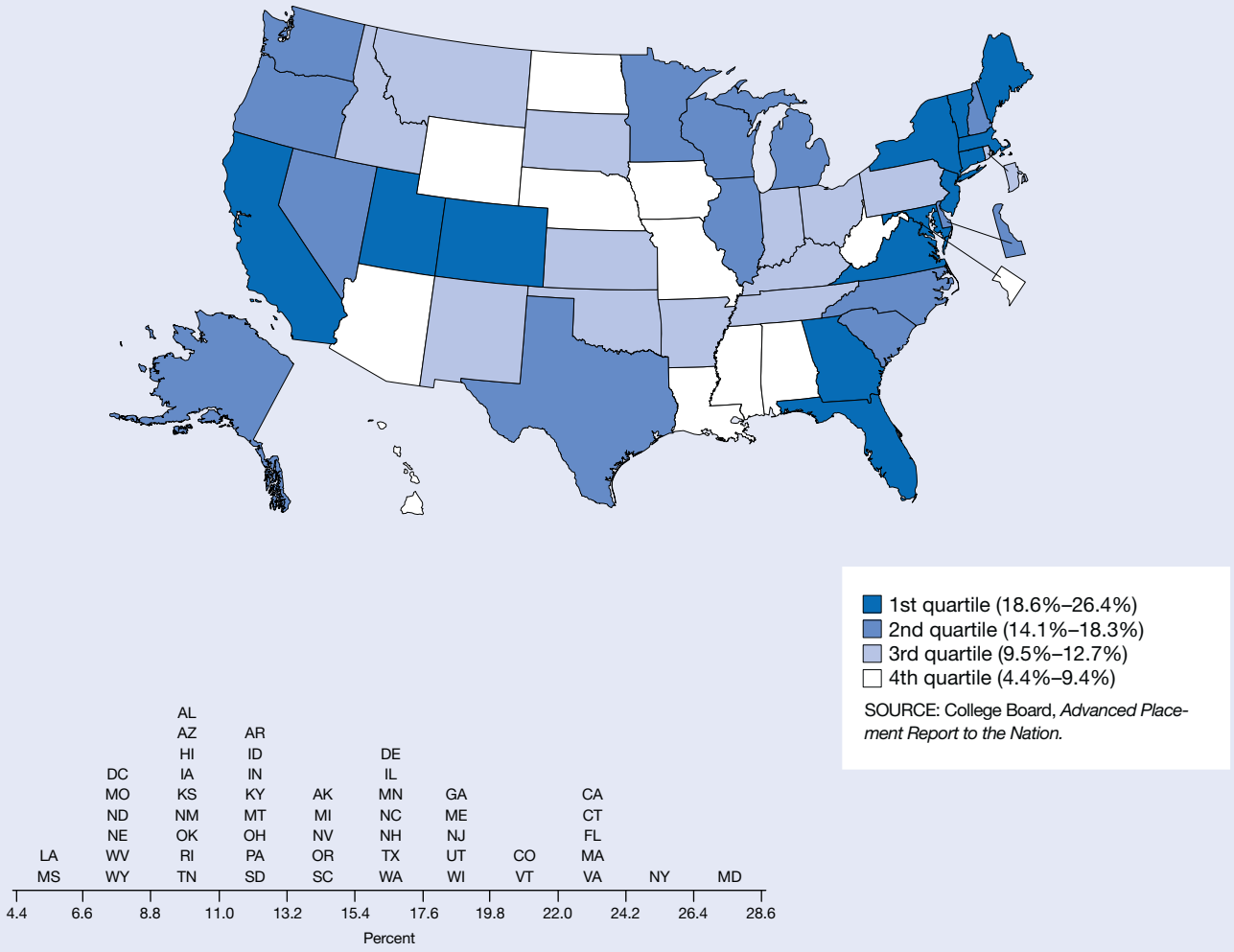
NOTE: National average for United States is reported value in *Advanced Placement Report to the Nation.*

SOURCE: College Board, *Advanced Placement Report to the Nation* (various years).

Science and Engineering Indicators 2012

Percentage of Public High School Students Scoring 3 or Higher on at Least One Advanced Placement Exam

Figure 8-13
Percentage of public high school students scoring 3 or higher on at least one Advanced Placement Exam: 2010



Findings

- Nationally, 16.9% of public school students in the class of 2010 demonstrated the ability to do college-level work by obtaining a score of 3 or higher on at least one AP Exam, a substantial increase from the 10.2% of the class of 2000 who obtained that score.
- Students from all states and the District of Columbia demonstrated greater success on AP Exams in 2010 than in 2000, but this success was not evenly distributed. In 2010, 13 states and the District of Columbia had percentages below the 2000 national average of 10.2% compared with 38 jurisdictions in 2000.
- The percentage of students who scored 3 or higher on an AP Exam varied widely among states. For the class of 2010, this percentage ranged from a low of 4.4% to a high of 26.4% across states.

This indicator represents the extent to which high school students are successfully demonstrating mastery of college-level material in specific disciplines. State scores on this indicator reflect students' access to rigorous coursework as well as their success in comprehending and using it. The indicator value is defined as the percentage of U.S. public high school graduates who have scored 3 or higher on at least one Advanced Placement (AP) Exam. Many colleges and universities grant college credit or advanced placement for AP Exam scores of 3 or higher. Students who score a 3 or higher typically experience greater academic success in college and higher graduation rates.

A total of 33 different AP Exams are offered each spring by the College Board. The exams include a multiple choice section and a free response section. To prepare for the AP Exam in a subject area, most students enroll in an AP class that employs a curriculum of high academic intensity. Performance on AP Exams has been shown in research to be one of the best predictors of success in college.

Table 8-13
Public high school students scoring 3 or higher on at least one Advanced Placement Exam, by state: 2000, 2005, and 2010
(Percent)

State	2000	2005	2010
United States	10.2	14.1	16.9
Alabama	3.9	5.3	9.0
Alaska	10.1	12.4	14.3
Arizona	7.2	9.2	8.8
Arkansas	4.3	7.7	12.5
California	15.0	19.7	22.3
Colorado	12.2	16.9	21.4
Connecticut	13.6	19.1	23.2
Delaware	7.6	12.9	15.4
District of Columbia	6.6	8.7	6.9
Florida	13.5	18.5	22.3
Georgia	9.7	13.5	19.1
Hawaii	5.8	8.2	9.4
Idaho	6.5	9.6	11.0
Illinois	9.9	14.1	17.2
Indiana	6.0	8.9	12.4
Iowa	4.9	6.7	8.8
Kansas	4.4	6.5	9.5
Kentucky	5.5	8.3	12.2
Louisiana	1.9	2.5	4.6
Maine	10.1	14.4	19.0
Maryland	14.1	21.0	26.4
Massachusetts	14.5	18.7	23.1
Michigan	8.8	11.6	15.0
Minnesota	8.1	11.5	16.8
Mississippi	2.3	3.3	4.4
Missouri	3.7	6.0	7.5
Montana	6.8	10.0	11.7
Nebraska	3.2	4.4	7.4
Nevada	9.1	12.0	15.0
New Hampshire	9.2	11.5	16.6
New Jersey	12.9	16.5	18.6
New Mexico	6.1	8.5	10.2
New York	17.9	22.8	24.6
North Carolina	11.3	17.1	17.5
North Dakota	4.4	6.0	6.8
Ohio	7.1	10.1	11.8
Oklahoma	5.4	8.2	10.3
Oregon	7.1	10.7	14.1
Pennsylvania	8.3	10.5	12.7
Rhode Island	6.9	8.1	10.9
South Carolina	10.0	12.6	15.1
South Dakota	5.9	8.8	11.0
Tennessee	6.2	8.9	9.7
Texas	9.9	13.7	15.5
Utah	17.4	20.5	19.2
Vermont	11.5	15.4	21.8
Virginia	15.9	19.3	23.7
Washington	7.6	13.2	17.1
West Virginia	4.6	5.8	7.6
Wisconsin	10.5	14.5	18.3
Wyoming	3.8	5.8	8.5
Puerto Rico	NA	NA	NA

NA = not available

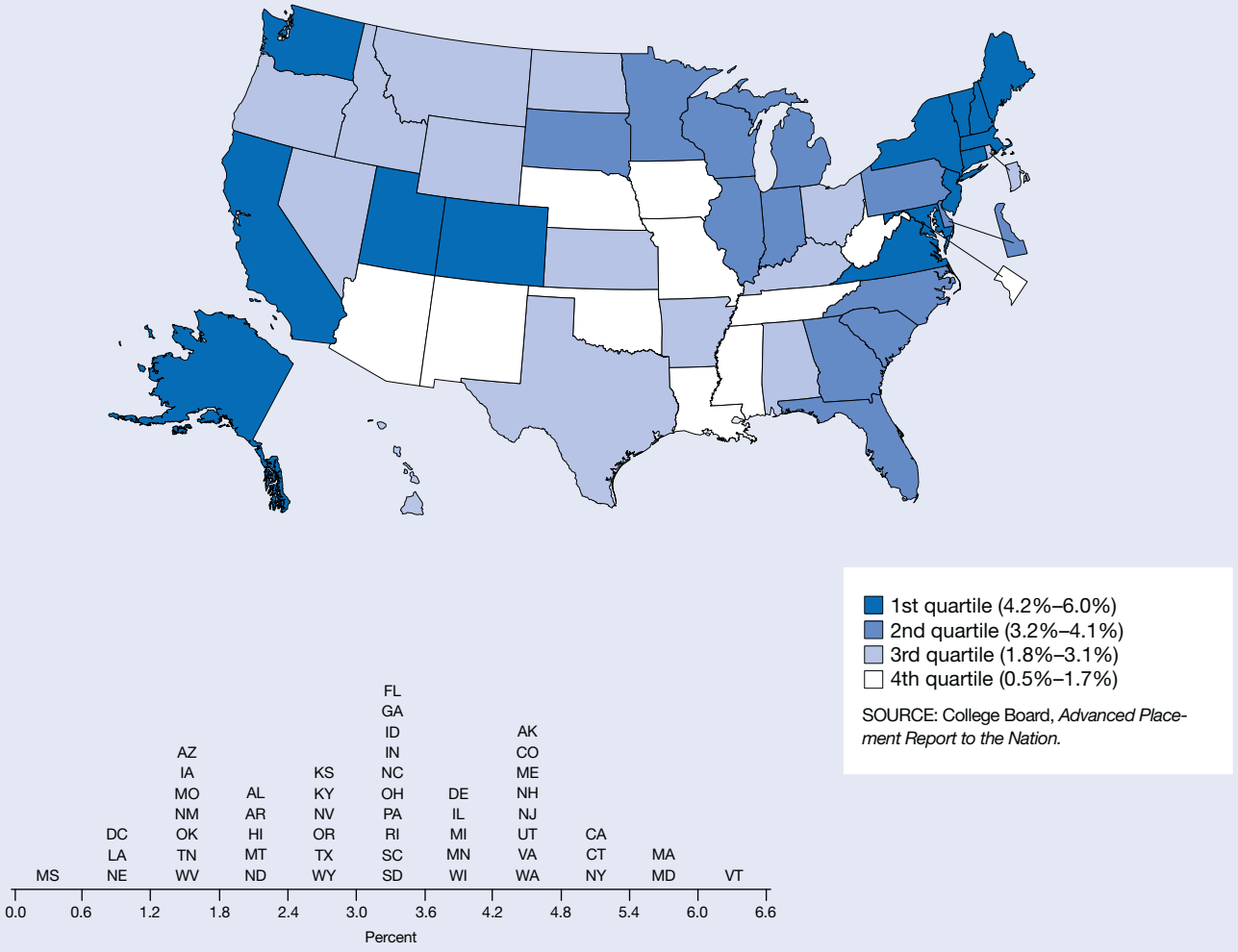
NOTE: National average for United States is reported value in *Advanced Placement Report to the Nation*.

SOURCE: College Board, *Advanced Placement Report to the Nation* (various years).

Science and Engineering Indicators 2012

Percentage of Public High School Students Scoring 3 or Higher on Advanced Placement Calculus AB Exam

Figure 8-14
Percentage of public high school students scoring 3 or higher on Advanced Placement Calculus AB Exam: 2010



Findings

- In 2010, a total of 237,000 Calculus AB exams were taken in the United States, and 137,000 were scored 3 or higher. Public school students took 200,000 Calculus AB exams and 108,000 of those were scored at 3 or above. The remaining 37,000 Calculus AB exams were taken by students who did not attend public schools, i.e., those who attended independent or religious schools, home schools, or did not identify their school.
- Nationally, the share of the graduating class that demonstrated a mastery of Calculus AB by scoring a 3 or higher on the AP Exam increased from 2.7% in 2000 to 3.5% in 2010. Values for individual states ranged from a low of 0.5% to a high of 6.0% in 2010.
- Between 2000 and 2010, nearly all states increased the percentage of high school graduates that had demonstrated their ability in Calculus AB. However, four states showed lower percentages in 2010.
- Because the percentages are small, year-to-year comparisons should be made with caution. Variability in students' course selection and level of performance can affect the numbers.

The Advanced Placement (AP) Calculus AB exam seeks to assess how well a student has mastered the concepts and techniques of differential and integral calculus. Many colleges and universities grant college credit or advanced placement for AP exam scores of 3 or higher.

AP courses in calculus consist of a full high school academic year of work and are comparable to calculus courses taught at colleges and universities. Prior to taking an AP Calculus course, students are expected to have completed four years of secondary mathematics intended for college-bound students consisting of courses in algebra, geometry, trigonometry, analytic geometry, and elementary functions. Even though a Calculus AB course may cover elementary functions, most of its topics will address differential and integral calculus. The use of a graphing calculator in AP Calculus is considered an integral part of the course, and graphing calculators are required on portions of the AP Examination.

Successful performance on the Calculus AB exam indicates that the student has a solid mathematical background and is prepared to undertake advanced training in mathematics, science, or engineering at the college or university level.

Table 8-14
Public high school students scoring 3 or higher on Advanced Placement Calculus AB Exam, by state: 2000, 2005, and 2010
(Percent)

State	2000	2005	2010
United States	2.7	3.2	3.5
Alabama	0.8	1.0	1.8
Alaska	3.2	4.0	4.6
Arizona	1.8	2.1	1.6
Arkansas	2.2	1.7	2.1
California	3.4	4.3	4.8
Colorado	2.4	3.0	4.4
Connecticut	3.4	4.0	5.0
Delaware	2.2	3.5	3.8
District of Columbia	0.7	1.7	0.8
Florida	3.2	3.2	3.3
Georgia	2.5	3.0	3.3
Hawaii	1.5	1.9	2.0
Idaho	1.6	2.8	3.0
Illinois	3.2	3.6	3.9
Indiana	2.3	2.5	3.3
Iowa	1.4	1.6	1.7
Kansas	1.2	1.8	2.4
Kentucky	1.6	0.4	2.7
Louisiana	0.4	0.3	0.8
Maine	2.7	3.4	4.3
Maryland	3.4	4.3	5.4
Massachusetts	4.0	4.6	5.6
Michigan	2.5	3.0	3.6
Minnesota	3.0	3.3	4.1
Mississippi	0.5	0.7	0.5
Missouri	0.9	1.3	1.5
Montana	1.3	1.7	2.2
Nebraska	0.6	0.9	1.1
Nevada	2.1	2.6	2.6
New Hampshire	3.0	2.8	4.2
New Jersey	3.8	3.8	4.2
New Mexico	1.4	1.7	1.6
New York	5.1	5.0	5.2
North Carolina	3.4	3.9	3.2
North Dakota	1.2	1.6	1.8
Ohio	2.3	3.0	3.0
Oklahoma	1.3	1.1	1.3
Oregon	1.8	2.2	2.9
Pennsylvania	2.4	2.8	3.2
Rhode Island	1.6	1.9	3.1
South Carolina	3.4	3.7	3.5
South Dakota	2.4	3.2	3.4
Tennessee	1.5	1.7	1.5
Texas	1.9	2.4	2.6
Utah	5.0	4.9	4.7
Vermont	3.5	3.9	6.0
Virginia	3.7	3.6	4.2
Washington	2.7	4.0	4.6
West Virginia	1.3	1.4	1.3
Wisconsin	3.1	3.7	4.0
Wyoming	1.6	1.6	2.5
Puerto Rico	NA	NA	NA

NA = not available

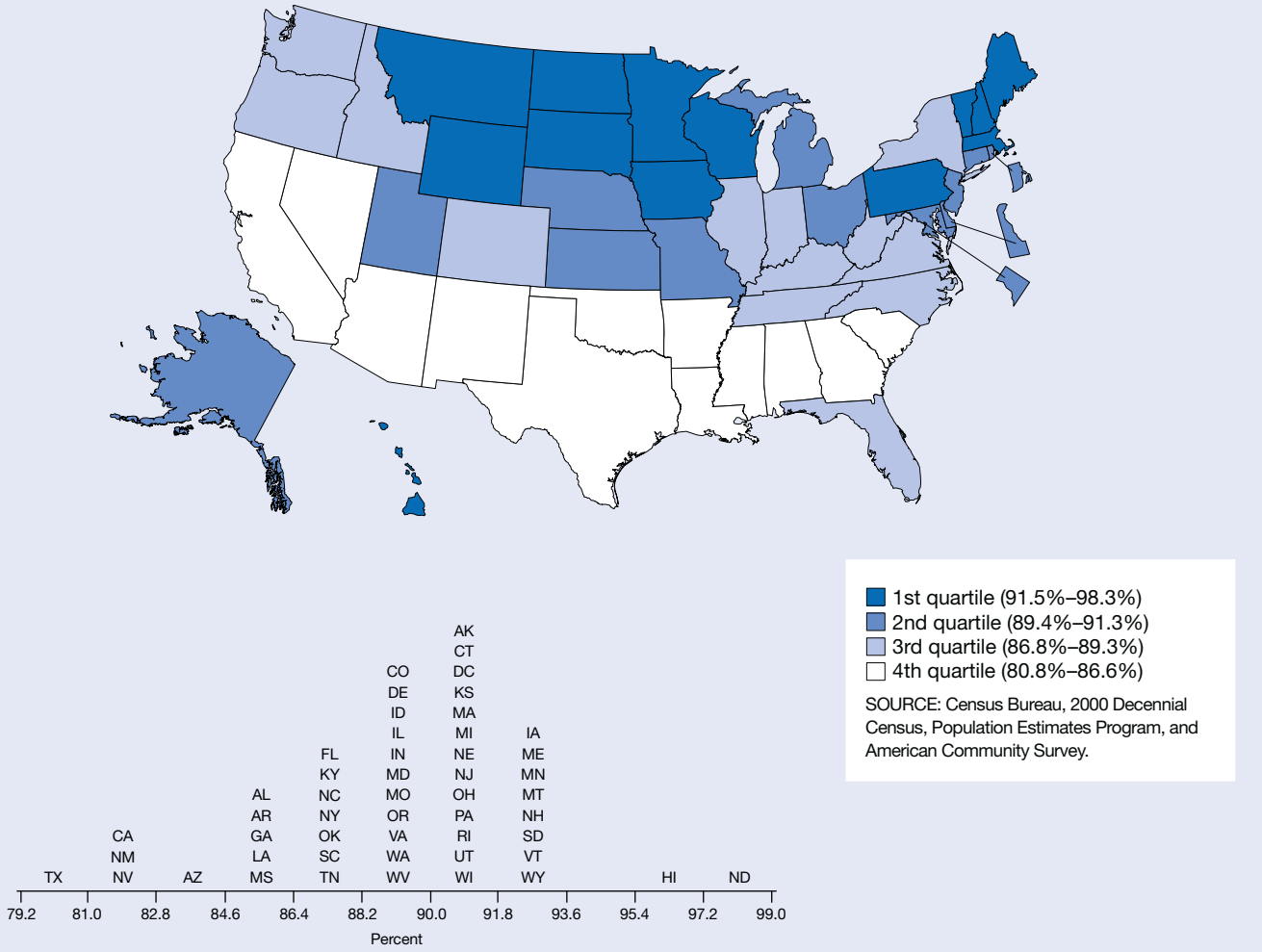
NOTE: National average for United States is reported value in *Advanced Placement Report to the Nation*.

SOURCE: College Board, *Advanced Placement Report to the Nation* (various years).

Science and Engineering Indicators 2012

High School Graduates Among Individuals 25–44 Years Old

Figure 8-15
High school graduates among individuals 25–44 years old: 2009



Findings

- Nationwide, 87.1% of the early- to mid-career population had at least a high school credential in 2009, a slight increase from the 85.0% who held such a credential in 2000.
- Forty-six states and the District of Columbia showed an increase in the percentage of their early- to mid-career population with at least a high school credential between 2000 and 2009. Six states had 2009 values below the 2000 national average of 85.0%, compared with 17 states and the District of Columbia in 2000.
- In 2009, the early- to mid-career population with at least a high school credential varied greatly among states, ranging from 80.8% to 98.3%. States in close proximity to the southern border of the United States tended to rank lowest on this indicator.

This indicator represents the percentage of the early- to mid-career population that has earned at least a high school credential. The indicator displays results based on where high school graduates live rather than where they were educated. High values indicate a resident population and potential workforce with widespread basic education credentials.

Estimates of educational attainment have been developed by the U.S. Census Bureau. Data from 2005 and later are derived from the American Community Survey (ACS), the largest household survey in the United States, with a sample size of about 3 million addresses. The ACS collects information on an annual basis. Data prior to 2005 were derived from the Decennial Census.

Estimates of population ages 25–44 are provided by the Census Bureau based on the 2000 Decennial Census. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

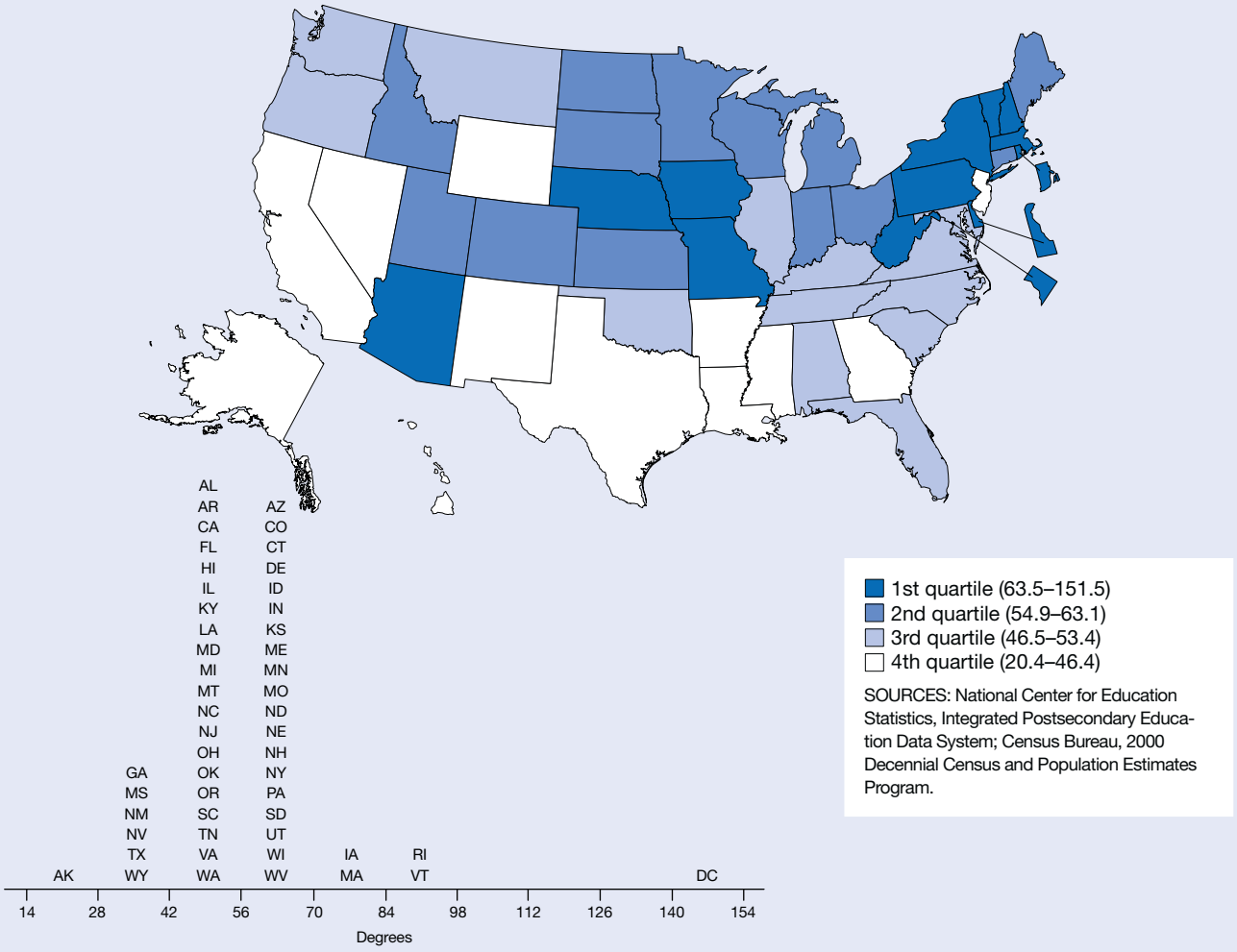
Table 8-15
High school graduates among individuals 25–44 years old, by state: 2000, 2005, and 2009

State	Graduates 25–44 years old			Population 25–44 years old			Graduates/population 25–44 years old (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	72,241,876	71,215,646	72,337,536	85,040,251	83,257,116	83,096,278	85.0	85.5	87.1
Alabama	1,064,945	1,035,193	1,055,386	1,288,527	1,231,043	1,235,509	82.6	84.1	85.4
Alaska	186,160	162,669	179,001	203,522	191,837	197,248	91.5	84.8	90.7
Arizona	1,232,818	1,367,583	1,528,930	1,511,469	1,695,189	1,826,751	81.6	80.7	83.7
Arkansas	622,698	633,557	651,055	750,972	747,630	755,915	82.9	84.7	86.1
California	8,286,071	8,316,850	8,590,128	10,714,403	10,668,824	10,604,180	77.3	78.0	81.0
Colorado	1,242,919	1,240,697	1,279,279	1,400,850	1,388,046	1,445,400	88.7	89.4	88.5
Connecticut	926,614	852,932	820,616	1,032,689	951,020	899,649	89.7	89.7	91.2
Delaware	207,799	206,583	209,049	236,441	234,823	232,837	87.9	88.0	89.8
District of Columbia	157,077	163,027	180,722	189,439	190,118	197,983	82.9	85.8	91.3
Florida	3,840,710	4,000,762	4,170,014	4,569,347	4,787,948	4,789,059	84.1	83.6	87.1
Georgia	2,238,995	2,368,999	2,418,543	2,652,764	2,746,294	2,830,740	84.4	86.3	85.4
Hawaii	333,762	308,637	344,834	362,336	354,560	360,037	92.1	87.0	95.8
Idaho	316,815	327,870	355,984	362,401	375,247	400,329	87.4	87.4	88.9
Illinois	3,265,416	3,200,557	3,146,716	3,795,544	3,611,958	3,544,995	86.0	88.6	88.8
Indiana	1,567,100	1,500,650	1,502,416	1,791,828	1,716,726	1,689,050	87.5	87.4	89.0
Iowa	740,397	713,525	685,787	808,259	746,659	734,622	91.6	95.6	93.4
Kansas	687,268	656,920	649,026	769,204	713,752	717,645	89.3	92.0	90.4
Kentucky	1,009,246	993,094	1,014,340	1,210,773	1,172,770	1,162,402	83.4	84.7	87.3
Louisiana	1,044,255	1,026,229	1,022,069	1,293,128	1,217,593	1,186,325	80.8	84.3	86.2
Maine	339,227	317,653	301,407	370,597	344,295	322,409	91.5	92.3	93.5
Maryland	1,487,216	1,399,879	1,398,327	1,664,677	1,611,882	1,557,085	89.3	86.8	89.8
Massachusetts	1,795,438	1,690,234	1,635,794	1,989,783	1,857,726	1,787,350	90.2	91.0	91.5
Michigan	2,630,713	2,455,339	2,293,446	2,960,544	2,743,365	2,536,880	88.9	89.5	90.4
Minnesota	1,395,170	1,345,742	1,299,949	1,497,320	1,420,387	1,394,305	93.2	94.7	93.2
Mississippi	650,242	648,458	644,971	807,170	771,676	761,785	80.6	84.0	84.7
Missouri	1,426,806	1,378,001	1,388,876	1,626,302	1,566,374	1,554,391	87.7	88.0	89.4
Montana	225,105	216,509	214,586	245,220	226,076	231,769	91.8	95.8	92.6
Nebraska	441,527	421,008	412,126	487,107	453,659	451,666	90.6	92.8	91.2
Nevada	508,173	585,942	631,069	628,572	719,501	769,608	80.8	81.4	82.0
New Hampshire	350,744	330,926	310,704	381,240	357,080	333,694	92.0	92.7	93.1
New Jersey	2,313,820	2,165,296	2,135,875	2,624,146	2,485,721	2,363,679	88.2	87.1	90.4
New Mexico	425,745	411,608	430,512	516,100	510,063	523,059	82.5	80.7	82.3
New York	4,926,064	4,786,794	4,697,650	5,831,622	5,548,409	5,351,598	84.5	86.3	87.8
North Carolina	2,117,289	2,148,501	2,217,822	2,500,535	2,485,963	2,553,673	84.7	86.4	86.8
North Dakota	164,893	155,297	150,983	174,891	151,681	153,582	94.3	102.4	98.3
Ohio	2,965,744	2,759,770	2,716,279	3,325,210	3,122,259	2,998,151	89.2	88.4	90.6
Oklahoma	836,030	807,209	828,944	975,169	929,451	957,235	85.7	86.8	86.6
Oregon	861,602	872,276	907,376	997,269	988,164	1,028,645	86.4	88.3	88.2
Pennsylvania	3,136,195	2,908,593	2,922,659	3,508,562	3,280,173	3,187,617	89.4	88.7	91.7
Rhode Island	265,033	264,154	247,679	310,636	296,463	274,622	85.3	89.1	90.2
South Carolina	990,207	999,627	1,036,562	1,185,955	1,172,501	1,200,366	83.5	85.3	86.4
South Dakota	188,052	180,013	180,578	206,399	194,122	196,143	91.1	92.7	92.1
Tennessee	1,439,729	1,459,559	1,502,094	1,718,428	1,698,113	1,710,134	83.8	86.0	87.8
Texas	5,115,457	5,248,281	5,709,404	6,484,321	6,665,252	7,064,651	78.9	78.7	80.8
Utah	555,513	646,632	700,665	626,600	686,668	775,481	88.7	94.2	90.4
Vermont	162,109	150,073	138,869	176,456	158,184	148,584	91.9	94.9	93.5
Virginia	1,962,040	1,896,614	1,959,386	2,237,655	2,194,670	2,194,699	87.7	86.4	89.3
Washington	1,617,766	1,592,550	1,654,322	1,816,217	1,783,093	1,855,094	89.1	89.3	89.2
West Virginia	420,900	411,155	408,715	501,343	468,846	459,606	84.0	87.7	88.9
Wisconsin	1,429,331	1,367,667	1,326,456	1,581,690	1,495,775	1,449,006	90.4	91.4	91.5
Wyoming	126,931	117,952	129,556	138,619	127,487	139,035	91.6	92.5	93.2
Puerto Rico	794,579	868,650	879,051	1,049,995	1,076,844	1,084,239	75.7	80.7	81.1

SOURCES: Census Bureau, 2000 Decennial Census, Population Estimates Program (various years), and American Community Survey (various years).

Bachelor's Degrees Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-16
Bachelor's degrees conferred per 1,000 individuals 18–24 years old: 2009



Findings

- In 2009, over 1.6 million bachelor's degrees were conferred nationally in all fields, which is up from 1.2 million in 2000 and represents an increase of 29%. Between 2000 and 2009, the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old in the population has increased by nearly 16% nationwide.
- In 2009, state values on this indicator varied greatly. They ranged from 20.4 to 91.8 bachelor's degrees conferred per 1,000 individuals 18–24 years old.
- The number of bachelor's degrees conferred per 1,000 individuals 18–24 years old increased in all but 4 states between 2000 and 2009.

Educational attainment gives people greater opportunities to work in higher-paying jobs than are generally available to those with less education. Earning a bachelor's degree also prepares them for advanced education.

Educational attainment varies by several demographic characteristics including age. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree. This indicator represents the extent the 18–24 year old population has earned a bachelor's degree.

The number of bachelor's degrees awarded is based on an actual count provided by the National Center of Education Statistics. Estimates of the population ages 18–24 years are provided by the U.S. Census Bureau. Small differences in the indicator value between states or across time generally are not meaningful.

A high value for this indicator may suggest the successful provision of educational opportunity at this level. Student mobility after graduation is not accounted for which may make this indicator less meaningful in predicting the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students, a situation that sometimes occurs in states with small resident populations and the District of Columbia.

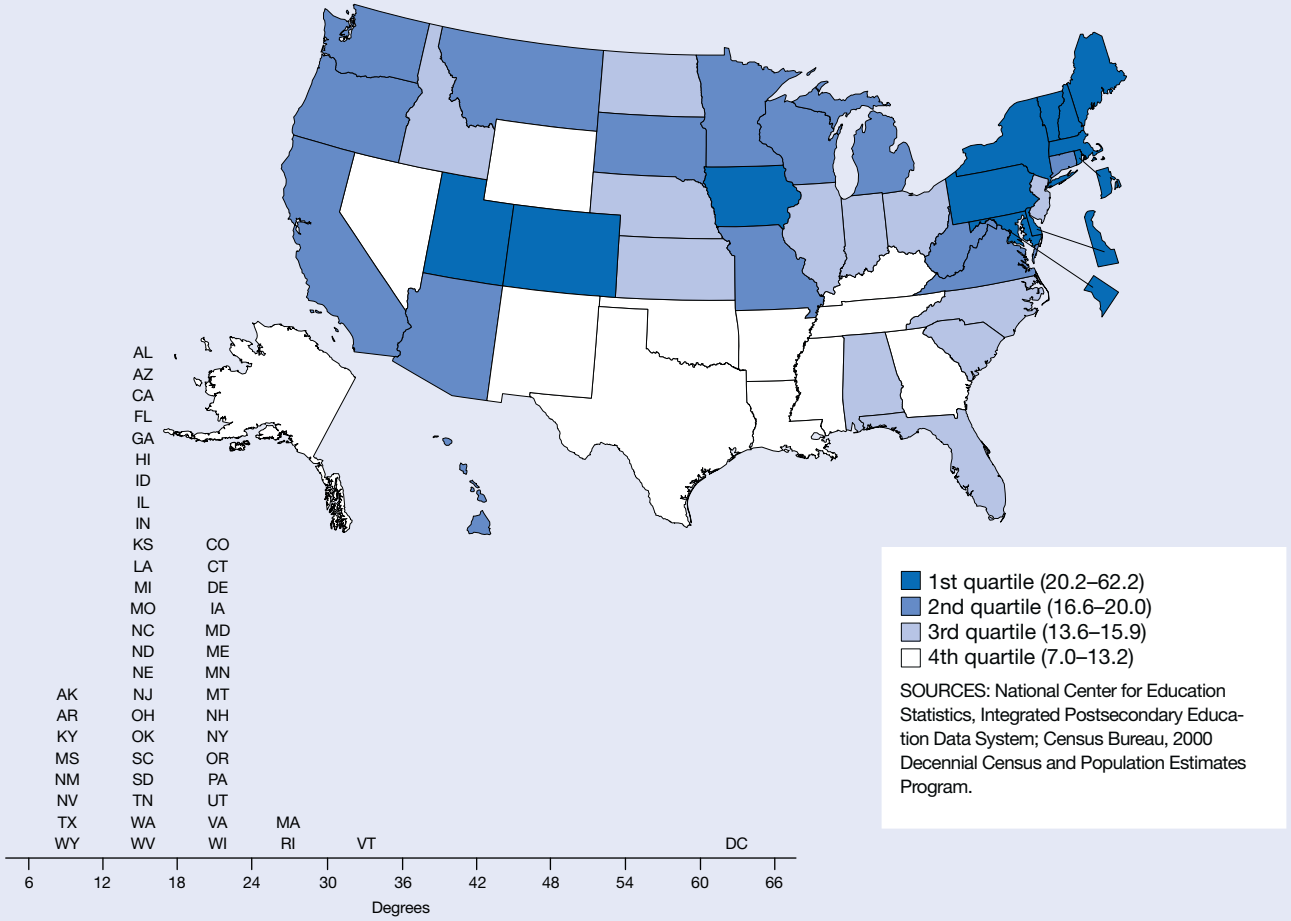
Table 8-16
Bachelor's degrees conferred per 1,000 individuals 18–24 years old, by state: 2000, 2005, and 2009

State	Bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	1,237,875	1,439,264	1,601,368	27,316,537	29,404,797	30,412,035	45.3	48.9	52.7
Alabama	21,293	21,616	24,245	442,009	453,363	465,249	48.2	47.7	52.1
Alaska	1,364	1,427	1,626	57,724	78,831	79,696	23.6	18.1	20.4
Arizona	20,865	29,133	39,898	519,381	570,206	610,920	40.2	51.1	65.3
Arkansas	9,405	11,191	12,027	263,326	269,720	273,263	35.7	41.5	44.0
California	121,546	146,959	160,930	3,389,475	3,601,422	3,746,026	35.9	40.8	43.0
Colorado	22,485	26,142	29,879	434,165	479,582	500,695	51.8	54.5	59.7
Connecticut	15,072	16,833	19,178	273,000	315,265	340,550	55.2	53.4	56.3
Delaware	4,665	5,247	5,472	75,857	79,909	83,522	61.5	65.7	65.5
District of Columbia	6,806	9,199	10,957	72,867	67,720	72,339	93.4	135.8	151.5
Florida	51,333	65,839	80,275	1,340,658	1,583,393	1,667,090	38.3	41.6	48.2
Georgia	29,219	35,515	40,461	844,924	912,133	979,688	34.6	38.9	41.3
Hawaii	5,091	5,300	5,797	115,683	128,311	124,841	44.0	41.3	46.4
Idaho	4,711	7,295	9,066	140,017	157,526	161,387	33.6	46.3	56.2
Illinois	55,036	63,913	69,339	1,217,816	1,273,336	1,298,744	45.2	50.2	53.4
Indiana	31,970	36,655	39,583	618,463	637,074	643,920	51.7	57.5	61.5
Iowa	18,750	20,786	26,239	299,438	320,586	321,355	62.6	64.8	81.7
Kansas	14,291	16,267	17,521	277,164	306,834	307,284	51.6	53.0	57.0
Kentucky	15,643	17,862	19,996	404,146	417,504	416,470	38.7	42.8	48.0
Louisiana	19,844	21,494	21,425	475,946	496,032	477,506	41.7	43.3	44.9
Maine	5,672	6,500	6,909	104,527	117,289	118,353	54.3	55.4	58.4
Maryland	22,089	25,990	27,909	454,129	515,830	547,538	48.6	50.4	51.0
Massachusetts	42,308	45,769	50,106	582,619	621,142	668,112	72.6	73.7	75.0
Michigan	45,754	51,207	54,641	937,626	997,376	995,230	48.8	51.3	54.9
Minnesota	23,175	28,275	31,275	473,816	523,797	526,091	48.9	54.0	59.4
Mississippi	10,988	11,681	12,430	312,663	317,707	313,729	35.1	36.8	39.6
Missouri	29,978	34,306	38,370	538,883	586,404	592,454	55.6	58.5	64.8
Montana	5,171	5,177	5,252	86,241	103,362	104,243	60.0	50.1	50.4
Nebraska	10,747	11,999	12,575	175,359	197,081	196,793	61.3	60.9	63.9
Nevada	4,245	5,608	7,119	181,984	210,962	228,809	23.3	26.6	31.1
New Hampshire	7,776	8,107	8,879	104,064	123,750	130,242	74.7	65.5	68.2
New Jersey	26,939	31,987	34,625	679,702	716,880	756,033	39.6	44.6	45.8
New Mexico	6,727	7,342	7,875	177,978	202,397	202,276	37.8	36.3	38.9
New York	95,558	111,201	122,186	1,772,439	1,839,901	1,923,887	53.9	60.4	63.5
North Carolina	35,257	39,303	44,834	814,485	855,830	942,328	43.3	45.9	47.6
North Dakota	4,877	5,161	5,604	73,371	89,501	88,808	66.5	57.7	63.1
Ohio	49,849	56,969	60,048	1,062,062	1,084,194	1,084,493	46.9	52.5	55.4
Oklahoma	15,578	18,266	19,634	358,410	387,237	386,532	43.5	47.2	50.8
Oregon	14,428	16,867	17,918	330,074	351,657	364,365	43.7	48.0	49.2
Pennsylvania	66,273	77,765	84,692	1,099,275	1,169,151	1,219,844	60.3	66.5	69.4
Rhode Island	8,402	9,417	10,291	107,100	109,690	112,088	78.5	85.9	91.8
South Carolina	16,033	18,795	21,058	410,784	427,535	452,903	39.0	44.0	46.5
South Dakota	4,494	4,771	5,031	78,087	87,891	87,586	57.6	54.3	57.4
Tennessee	22,958	26,032	29,388	552,177	570,664	585,173	41.6	45.6	50.2
Texas	75,834	88,757	102,157	2,213,346	2,429,659	2,523,258	34.3	36.5	40.5
Utah	17,058	20,799	21,504	320,147	342,610	341,926	53.3	60.7	62.9
Vermont	4,832	4,892	5,788	56,918	66,960	68,869	84.9	73.1	84.0
Virginia	33,599	36,970	42,483	686,011	776,170	814,917	49.0	47.6	52.1
Washington	24,002	28,265	30,091	563,091	617,519	644,616	42.6	45.8	46.7
West Virginia	8,545	9,574	11,366	173,092	172,766	169,767	49.4	55.4	67.0
Wisconsin	27,543	31,144	33,651	523,861	585,387	590,593	52.6	53.2	57.0
Wyoming	1,797	1,695	1,765	50,157	57,751	59,634	35.8	29.4	29.6
Puerto Rico	16,164	16,646	17,116	429,220	406,548	394,800	37.7	40.9	43.4

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).

Bachelor's Degrees in Science and Engineering Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-17
Bachelor's degrees in science and engineering conferred per 1,000 individuals 18–24 years old: 2009



SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Census Bureau, 2000 Decennial Census and Population Estimates Program.

Findings

- In 2009, more than 501,000 bachelor's degrees in S&E fields were conferred nationally, which is up from 394,000 in 2000 and represents an increase of 27%. Between 2000 and 2009, the number of bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old in the population increased by nearly 15% nationwide.
- In 2009, state values on this indicator varied greatly. They ranged from 7.0 to 31.4 bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old.
- The number of bachelor's degrees in S&E fields conferred per 1,000 individuals 18–24 years old decreased in 7 states between 2000 and 2009.
- The states producing the largest numbers of S&E bachelor's degrees were the same as those producing the largest numbers of bachelor's degrees in natural science and engineering (NS&E). However, in terms of educational output adjusted for population, the concentration of S&E bachelor's degrees was highest in the northeastern states unlike NS&E bachelor's degrees that were concentrated in the north central states.

Educational attainment in an S&E field gives people greater opportunities to work in higher-paying technical jobs than are generally available to those in other fields of study. Earning a bachelor's degree in an S&E field also prepares an individual for advanced technical education.

Educational attainment varies by several demographic characteristics including age. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree. This indicator represents the extent to which a state provides bachelor's level training in S&E fields, controlling for the size of its college-age population.

The number of bachelor's degrees awarded in S&E fields is based on an actual count provided by the National Center of Education Statistics. Estimates of the population ages 18–24 years are provided by the U.S. Census Bureau. Small differences in the indicator value between states or across time generally are not meaningful.

A high value for this indicator may suggest the successful provision of undergraduate training in S&E fields. Student mobility after graduation is not accounted for, which may make this indicator less meaningful in predicting the qualifications of a state's future technical workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students, a situation that sometimes occurs in states with small resident populations and the District of Columbia.

Table 8-17
Bachelor's degrees in science and engineering conferred per 1,000 individuals 18–24 years old, by state: 2000, 2005, and 2009

State	S&E bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
EPSCoR states	61,035	67,202	71,999	4,702,607	5,059,909	5,109,850	13.0	13.3	14.1
Non-EPSCoR states	330,351	394,690	424,576	22,541,063	24,277,168	25,229,846	14.7	16.3	16.8
Average EPSCoR state value	na	na	na	na	na	na	15.1	14.7	15.7
Average non-EPSCoR state value	na	na	na	na	na	na	15.6	17.1	17.8
United States	394,301	466,065	501,076	27,316,537	29,404,797	30,412,035	14.4	15.8	16.5
Alabama	5,575	5,767	6,490	442,009	453,363	465,249	12.6	12.7	13.9
Alaska	393	440	559	57,724	78,831	79,696	6.8	5.6	7.0
Arizona	5,154	7,741	10,173	519,381	570,206	610,920	9.9	13.6	16.7
Arkansas	2,392	2,748	2,751	263,326	269,720	273,263	9.1	10.2	10.1
California	46,406	58,536	63,381	3,389,475	3,601,422	3,746,026	13.7	16.3	16.9
Colorado	8,822	10,375	10,865	434,165	479,582	500,695	20.3	21.6	21.7
Connecticut	5,139	5,945	6,803	273,000	315,265	340,550	18.8	18.9	20.0
Delaware	1,546	1,656	1,688	75,857	79,909	83,522	20.4	20.7	20.2
District of Columbia	2,915	4,173	4,501	72,867	67,720	72,339	40.0	61.6	62.2
Florida	14,094	19,400	22,608	1,340,658	1,583,393	1,667,090	10.5	12.3	13.6
Georgia	8,990	11,354	11,782	844,924	912,133	979,688	10.6	12.4	12.0
Hawaii	1,660	1,854	2,074	115,683	128,311	124,841	14.3	14.4	16.6
Idaho	1,492	1,960	2,340	140,017	157,526	161,387	10.7	12.4	14.5
Illinois	15,960	18,943	19,471	1,217,816	1,273,336	1,298,744	13.1	14.9	15.0
Indiana	8,921	10,477	10,211	618,463	637,074	643,920	14.4	16.4	15.9
Iowa	5,556	6,117	7,656	299,438	320,586	321,355	18.6	19.1	23.8
Kansas	4,157	4,713	4,599	277,164	306,834	307,284	15.0	15.4	15.0
Kentucky	4,153	4,537	4,944	404,146	417,504	416,470	10.3	10.9	11.9
Louisiana	5,568	6,076	5,782	475,946	496,032	477,506	11.7	12.2	12.1
Maine	2,117	2,354	2,518	104,527	117,289	118,353	20.3	20.1	21.3
Maryland	8,598	11,057	11,393	454,129	515,830	547,538	18.9	21.4	20.8
Massachusetts	16,062	17,589	18,463	582,619	621,142	668,112	27.6	28.3	27.6
Michigan	13,642	15,591	16,873	937,626	997,376	995,230	14.5	15.6	17.0
Minnesota	7,434	9,271	10,060	473,816	523,797	526,091	15.7	17.7	19.1
Mississippi	2,769	2,784	3,036	312,663	317,707	313,729	8.9	8.8	9.7
Missouri	8,169	9,532	9,908	538,883	586,404	592,454	15.2	16.3	16.7
Montana	1,734	1,807	1,874	86,241	103,362	104,243	20.1	17.5	18.0
Nebraska	2,657	3,039	3,133	175,359	197,081	196,793	15.2	15.4	15.9
Nevada	1,050	1,481	2,039	181,984	210,962	228,809	5.8	7.0	8.9
New Hampshire	2,788	2,826	2,929	104,064	123,750	130,242	26.8	22.8	22.5
New Jersey	10,822	11,856	12,028	679,702	716,880	756,033	15.9	16.5	15.9
New Mexico	1,939	2,188	2,308	177,978	202,397	202,276	10.9	10.8	11.4
New York	32,141	37,642	39,595	1,772,439	1,839,901	1,923,887	18.1	20.5	20.6
North Carolina	12,021	13,488	14,833	814,485	855,830	942,328	14.8	15.8	15.7
North Dakota	1,329	1,305	1,326	73,371	89,501	88,808	18.1	14.6	14.9
Ohio	13,874	15,485	16,257	1,062,062	1,084,194	1,084,493	13.1	14.3	15.0
Oklahoma	4,001	4,718	4,878	358,410	387,237	386,532	11.2	12.2	12.6
Oregon	5,381	6,261	6,545	330,074	351,657	364,365	16.3	17.8	18.0
Pennsylvania	21,115	24,723	26,514	1,099,275	1,169,151	1,219,844	19.2	21.1	21.7
Rhode Island	2,503	2,837	3,082	107,100	109,690	112,088	23.4	25.9	27.5
South Carolina	4,996	5,784	6,151	410,784	427,535	452,903	12.2	13.5	13.6
South Dakota	1,506	1,494	1,571	78,087	87,891	87,586	19.3	17.0	17.9
Tennessee	6,532	7,156	7,727	552,177	570,664	585,173	11.8	12.5	13.2
Texas	20,831	25,294	27,723	2,213,346	2,429,659	2,523,258	9.4	10.4	11.0
Utah	5,245	6,870	6,986	320,147	342,610	341,926	16.4	20.1	20.4
Vermont	1,821	1,992	2,349	56,918	66,960	68,869	32.0	29.7	34.1
Virginia	12,933	13,748	15,158	686,011	776,170	814,917	18.9	17.7	18.6
Washington	7,905	10,121	10,692	563,091	617,519	644,616	14.0	16.4	16.6
West Virginia	2,204	2,285	2,929	173,092	172,766	169,767	12.7	13.2	17.3
Wisconsin	8,604	10,118	10,871	523,861	585,387	590,593	16.4	17.3	18.4
Wyoming	685	557	649	50,157	57,751	59,634	13.7	9.6	10.9
Puerto Rico	4,187	4,042	4,237	429,220	406,548	394,800	9.8	9.9	10.7

na = not applicable

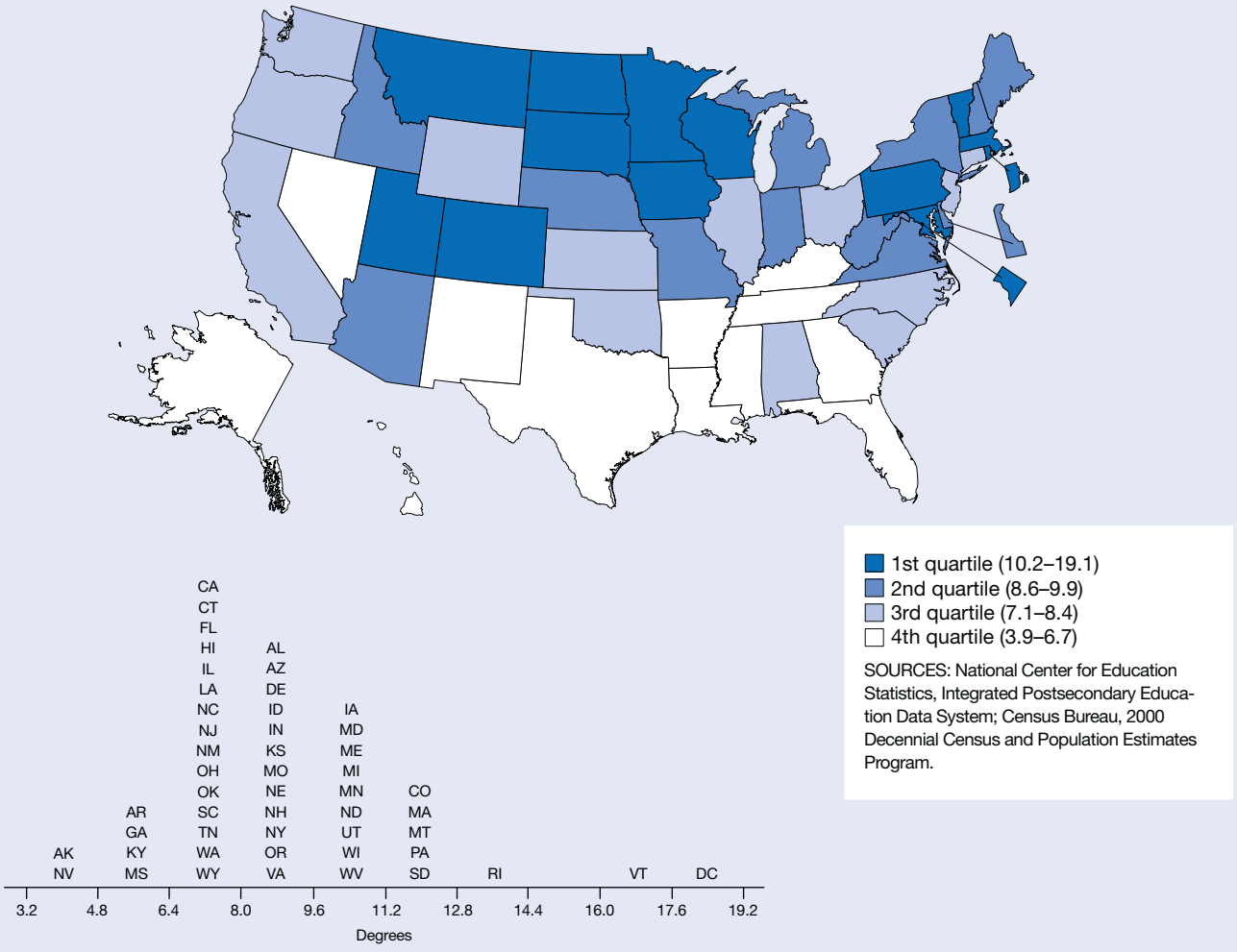
EPSCoR = Experimental Program to Stimulate Competitive Research

NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).

Bachelor's Degrees in Natural Sciences and Engineering Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-18
Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old: 2009



Findings

- Between 2000 and 2009, the value of this indicator did not change appreciably.
- In 2009, the value of this indicator ranged from 3.9 to16.0 natural sciences and engineering (NS&E) bachelor's degrees conferred per 1,000 individuals 18–24 years old for individual states.
- The states conferring the largest number of bachelor's degrees in NS&E fields were California, New York, Texas, and Pennsylvania.
- States that ranked in the top 2 quartiles on this indicator were generally the same as those in the top 2 quartiles for the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old.

Natural sciences and engineering (NS&E) fields include the physical, earth, ocean, atmospheric, biological, agricultural, and computer sciences; mathematics; and engineering. NS&E fields do not include social sciences and psychology. This indicator is the ratio of new NS&E bachelor's degrees to the population ages18–24 years and represents the extent to which a state prepares young people to enter technology-intensive occupations that are fundamental to a knowledge-based, technology-driven economy. In addition, the presence of higher education institutions that produce such degrees may generate resources for the state. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursing an undergraduate degree.

The number of NS&E bachelor's degrees awarded is based on an actual count provided by the National Center for Education Statistics. Estimates of the population ages 18–24 years are provided by the U.S. Census Bureau. Small differences in the value of the indicator between states or across time generally are not meaningful.

Because students often relocate after graduation, this measure does not necessarily indicate the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large number of out-of-state students who study NS&E fields, a situation that occurs in the District of Columbia and some states with small resident populations.

Table 8-18
Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old, by state: 2000, 2005, and 2009

State	NS&E bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
EPSCoR states	35,201	37,177	38,960	4,702,607	5,059,909	5,109,850	7.5	7.3	7.6
Non-EPSCoR states	171,285	198,206	209,080	22,541,063	24,277,168	25,229,846	7.6	8.2	8.3
Average EPSCoR state value	na	na	na	na	na	na	8.5	8.0	8.4
Average non-EPSCoR state value	na	na	na	na	na	na	8.1	8.6	8.8
United States	207,375	236,700	249,420	27,316,537	29,404,797	30,412,035	7.6	8.0	8.2
Alabama	3,556	3,511	3,891	442,009	453,363	465,249	8.0	7.7	8.4
Alaska	240	248	313	57,724	78,831	79,696	4.2	3.1	3.9
Arizona	2,928	5,069	5,284	519,381	570,206	610,920	5.6	8.9	8.6
Arkansas	1,440	1,630	1,563	263,326	269,720	273,263	5.5	6.0	5.7
California	22,036	26,786	28,386	3,389,475	3,601,422	3,746,026	6.5	7.4	7.6
Colorado	4,742	5,475	5,714	434,165	479,582	500,695	10.9	11.4	11.4
Connecticut	1,852	2,116	2,540	273,000	315,265	340,550	6.8	6.7	7.5
Delaware	696	694	740	75,857	79,909	83,522	9.2	8.7	8.9
District of Columbia	889	1,317	1,380	72,867	67,720	72,339	12.2	19.4	19.1
Florida	7,353	9,097	10,769	1,340,658	1,583,393	1,667,090	5.5	5.7	6.5
Georgia	5,190	6,063	6,190	844,924	912,133	979,688	6.1	6.6	6.3
Hawaii	719	754	842	115,683	128,311	124,841	6.2	5.9	6.7
Idaho	1,013	1,234	1,437	140,017	157,526	161,387	7.2	7.8	8.9
Illinois	8,971	11,002	10,080	1,217,816	1,273,336	1,298,744	7.4	8.6	7.8
Indiana	5,113	5,797	5,573	618,463	637,074	643,920	8.3	9.1	8.7
Iowa	3,135	3,249	3,563	299,438	320,586	321,355	10.5	10.1	11.1
Kansas	2,436	2,637	2,463	277,164	306,834	307,284	8.8	8.6	8.0
Kentucky	2,266	2,293	2,503	404,146	417,504	416,470	5.6	5.5	6.0
Louisiana	3,395	3,600	3,216	475,946	496,032	477,506	7.1	7.3	6.7
Maine	1,091	1,136	1,172	104,527	117,289	118,353	10.4	9.7	9.9
Maryland	4,422	5,911	5,669	454,129	515,830	547,538	9.7	11.5	10.4
Massachusetts	7,328	7,623	8,215	582,619	621,142	668,112	12.6	12.3	12.3
Michigan	8,315	9,174	9,620	937,626	997,376	995,230	8.9	9.2	9.7
Minnesota	4,067	4,861	5,346	473,816	523,797	526,091	8.6	9.3	10.2
Mississippi	1,733	1,630	1,757	312,663	317,707	313,729	5.5	5.1	5.6
Missouri	4,767	5,350	5,329	538,883	586,404	592,454	8.8	9.1	9.0
Montana	1,173	1,127	1,223	86,241	103,362	104,243	13.6	10.9	11.7
Nebraska	1,581	1,642	1,782	175,359	197,081	196,793	9.0	8.3	9.1
Nevada	548	739	989	181,984	210,962	228,809	3.0	3.5	4.3
New Hampshire	1,281	1,130	1,186	104,064	123,750	130,242	12.3	9.1	9.1
New Jersey	5,249	5,354	5,376	679,702	716,880	756,033	7.7	7.5	7.1
New Mexico	1,243	1,392	1,306	177,978	202,397	202,276	7.0	6.9	6.5
New York	14,451	16,705	17,096	1,772,439	1,839,901	1,923,887	8.2	9.1	8.9
North Carolina	6,172	6,774	7,308	814,485	855,830	942,328	7.6	7.9	7.8
North Dakota	893	913	929	73,371	89,501	88,808	12.2	10.2	10.5
Ohio	7,828	8,106	8,504	1,062,062	1,084,194	1,084,493	7.4	7.5	7.8
Oklahoma	2,491	2,636	2,727	358,410	387,237	386,532	7.0	6.8	7.1
Oregon	2,440	2,831	3,068	330,074	351,657	364,365	7.4	8.1	8.4
Pennsylvania	11,671	13,719	14,453	1,099,275	1,169,151	1,219,844	10.6	11.7	11.8
Rhode Island	1,236	1,531	1,566	107,100	109,690	112,088	11.5	14.0	14.0
South Carolina	2,684	3,130	3,199	410,784	427,535	452,903	6.5	7.3	7.1
South Dakota	981	1,039	996	78,087	87,891	87,586	12.6	11.8	11.4
Tennessee	3,455	3,541	3,921	552,177	570,664	585,173	6.3	6.2	6.7
Texas	11,868	13,692	15,185	2,213,346	2,429,659	2,523,258	5.4	5.6	6.0
Utah	2,817	3,412	3,766	320,147	342,610	341,926	8.8	10.0	11.0
Vermont	840	865	1,102	56,918	66,960	68,869	14.8	12.9	16.0
Virginia	6,414	6,310	7,096	686,011	776,170	814,917	9.3	8.1	8.7
Washington	3,850	4,615	4,985	563,091	617,519	644,616	6.8	7.5	7.7
West Virginia	1,208	1,288	1,637	173,092	172,766	169,767	7.0	7.5	9.6
Wisconsin	4,851	5,574	6,044	523,861	585,387	590,593	9.3	9.5	10.2
Wyoming	457	378	421	50,157	57,751	59,634	9.1	6.5	7.1
Puerto Rico	3,013	2,848	3,039	429,220	406,548	394,800	7.0	7.0	7.7

na = not applicable

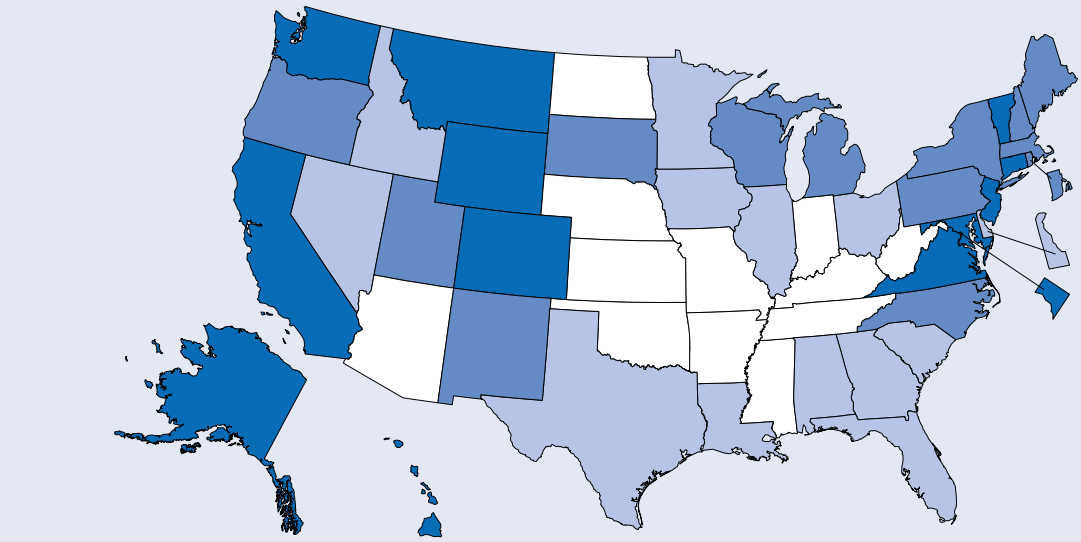
EPSCoR = Experimental Program to Stimulate Competitive Research; NS&E = natural sciences and engineering

NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

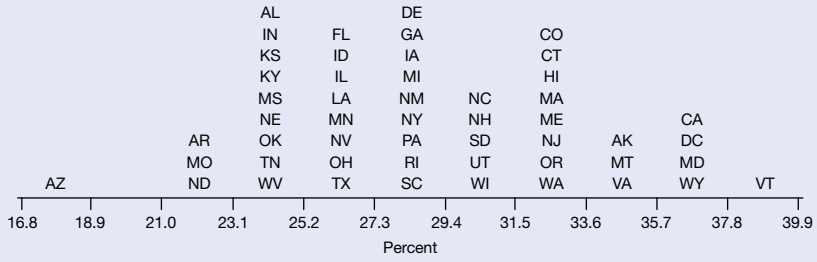
SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).

Science and Engineering Degrees as a Percentage of Higher Education Degrees Conferred

Figure 8-19
Science and engineering degrees as a percentage of higher education degrees conferred: 2009



SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System.



Findings

- In 2009, nearly 668,000 S&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of 30% since 2000.
- Nationally, the proportion of S&E degrees as a share of total degrees conferred decreased by 3% between 2005 and 2009.
- There are noteworthy differences in the proportions of S&E higher education degrees conferred in different states. In some states, only about 20% of higher education degrees were awarded in S&E fields. In others, nearly 40% of higher education degrees were awarded in S&E fields.
- The District of Columbia has a high value because of the large number of programs in political science and public administration at several of its academic institutions.

This indicator represents the extent to which a state's higher education programs are concentrated in S&E fields. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Counts of both S&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are not included.

Degree data reflect the location of the degree-granting institution, not the state where degree-earning students permanently reside. The year indicates the end date of the academic year. For example, data for 2009 represent degrees conferred during the 2008–09 academic year. All degree data are actual counts.

Table 8-19
Science and engineering degrees as a percentage of higher education degrees conferred, by state: 2000, 2005, and 2009

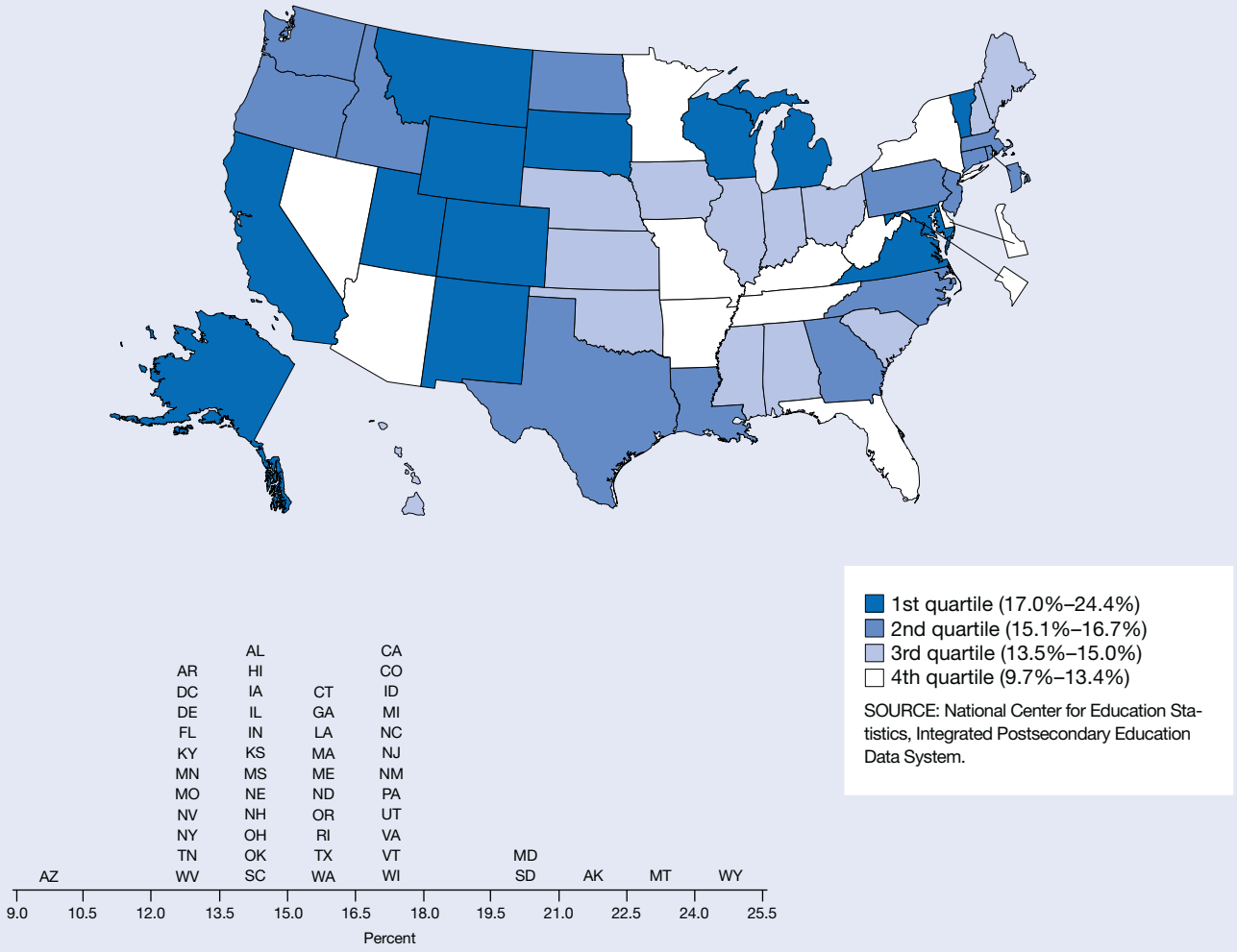
State	All S&E degrees			All higher education degrees			All S&E degrees/all higher education degrees (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	515,298	614,694	667,790	1,739,739	2,066,513	2,322,054	29.6	29.7	28.8
Alabama	7,512	8,038	8,899	29,848	32,180	35,725	25.2	25.0	24.9
Alaska	578	676	802	1,901	2,107	2,267	30.4	32.1	35.4
Arizona	6,890	9,613	13,432	31,863	49,921	72,140	21.6	19.3	18.6
Arkansas	2,828	3,306	3,390	11,916	14,291	16,089	23.7	23.1	21.1
California	61,903	77,557	84,579	171,337	207,416	230,605	36.1	37.4	36.7
Colorado	11,733	13,745	14,280	31,689	38,125	43,834	37.0	36.1	32.6
Connecticut	6,887	8,154	9,615	23,703	26,359	29,078	29.1	30.9	33.1
Delaware	1,940	2,163	2,241	6,296	7,512	8,118	30.8	28.8	27.6
District of Columbia	5,740	7,490	8,469	14,433	18,348	22,525	39.8	40.8	37.6
Florida	18,293	24,845	29,004	71,408	92,917	112,165	25.6	26.7	25.9
Georgia	11,754	14,807	15,775	40,661	49,851	57,165	28.9	29.7	27.6
Hawaii	2,235	2,412	2,656	6,986	7,497	8,001	32.0	32.2	33.2
Idaho	1,823	2,384	2,797	5,943	9,057	10,816	30.7	26.3	25.9
Illinois	22,464	27,237	28,725	84,112	102,657	111,875	26.7	26.5	25.7
Indiana	11,404	13,317	13,251	41,655	49,048	54,032	27.4	27.2	24.5
Iowa	6,611	7,378	9,079	23,165	25,774	33,315	28.5	28.6	27.3
Kansas	5,317	6,068	5,920	19,617	22,348	24,284	27.1	27.2	24.4
Kentucky	5,091	6,088	6,481	20,865	24,937	28,070	24.4	24.4	23.1
Louisiana	6,998	7,849	7,199	26,338	28,930	28,256	26.6	27.1	25.5
Maine	2,302	2,550	2,749	6,916	8,188	8,717	33.3	31.1	31.5
Maryland	12,235	15,675	16,514	33,753	40,381	44,369	36.2	38.8	37.2
Massachusetts	22,662	25,251	26,712	69,410	76,108	83,467	32.6	33.2	32.0
Michigan	18,430	21,335	22,804	67,567	75,675	78,332	27.3	28.2	29.1
Minnesota	9,043	11,915	13,887	31,839	42,566	52,323	28.4	28.0	26.5
Mississippi	3,397	3,577	3,937	14,598	15,931	17,023	23.3	22.5	23.1
Missouri	10,965	12,984	13,464	43,783	52,849	59,466	25.0	24.6	22.6
Montana	2,102	2,254	2,298	6,187	6,416	6,559	34.0	35.1	35.0
Nebraska	3,304	3,847	4,193	14,008	16,427	17,411	23.6	23.4	24.1
Nevada	1,365	1,963	2,585	5,813	7,776	9,884	23.5	25.2	26.2
New Hampshire	3,342	3,460	3,684	10,330	11,025	12,375	32.4	31.4	29.8
New Jersey	13,940	15,667	16,535	37,278	45,515	49,544	37.4	34.4	33.4
New Mexico	2,636	3,065	3,255	9,664	10,874	11,366	27.3	28.2	28.6
New York	42,901	51,470	54,412	146,896	176,054	193,777	29.2	29.2	28.1
North Carolina	14,651	16,665	18,671	46,045	52,192	60,854	31.8	31.9	30.7
North Dakota	1,519	1,539	1,610	5,798	6,454	7,128	26.2	23.8	22.6
Ohio	18,123	20,287	21,129	68,854	79,349	83,813	26.3	25.6	25.2
Oklahoma	5,982	6,342	6,384	21,374	24,398	25,995	28.0	26.0	24.6
Oregon	6,608	7,805	7,975	19,647	23,492	24,858	33.6	33.2	32.1
Pennsylvania	26,563	31,478	34,537	90,495	107,174	119,761	29.4	29.4	28.8
Rhode Island	3,012	3,447	3,783	10,524	11,883	13,002	28.6	29.0	29.1
South Carolina	5,953	6,855	7,279	20,995	24,268	26,666	28.4	28.2	27.3
South Dakota	1,813	1,966	1,990	5,456	6,077	6,377	33.2	32.4	31.2
Tennessee	8,029	8,749	9,601	31,502	35,453	40,553	25.5	24.7	23.7
Texas	27,962	34,612	38,196	103,283	124,122	142,321	27.1	27.9	26.8
Utah	6,289	8,153	8,339	20,866	25,382	27,003	30.1	32.1	30.9
Vermont	2,230	2,508	3,144	6,350	6,638	8,031	35.1	37.8	39.1
Virginia	16,299	17,810	20,822	45,870	51,210	60,840	35.5	34.8	34.2
Washington	9,720	12,449	13,215	32,085	37,831	40,136	30.3	32.9	32.9
West Virginia	2,750	2,945	3,772	11,144	12,522	15,787	24.7	23.5	23.9
Wisconsin	10,260	12,187	12,881	35,426	40,806	43,694	29.0	29.9	29.5
Wyoming	910	757	839	2,247	2,202	2,262	40.5	34.4	37.1
Puerto Rico	4,807	4,817	5,293	19,261	21,111	23,501	25.0	22.8	22.5

NOTES: All S&E degrees include bachelor's, master's, and doctorate. All S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering. All higher education degrees include bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Natural Sciences and Engineering Degrees as a Percentage of Higher Education Degrees Conferred

Figure 8-20
Natural sciences and engineering degrees as a percentage of higher education degrees conferred: 2009



Findings

- In 2009, nearly 354,000 NS&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of 25% since 2000.
- The proportion of NS&E degrees as a share of total degrees conferred showed a decline of 5% between 2005 and 2009.
- There are noteworthy differences in the proportions of natural sciences and engineering higher education degrees conferred in different states. In 2009, the proportions ranged between 9.7% and 24.4%.
- Nationally, over half, 53%, of all S&E degrees were in NS&E fields in 2009, down from 55% of all S&E degrees in 2000.
- States with the highest percentage of higher education degrees in natural science or engineering fields tended to be located in the western United States, and four of the top five are EPSCoR states.

This indicator represents the extent to which a state's higher education programs are concentrated in natural sciences and engineering (NS&E) fields. The indicator is expressed as the percentage of higher education degrees that were conferred in NS&E fields.

NS&E fields include the physical, life, earth, ocean, atmospheric, and computer sciences; mathematics; and engineering. Social sciences such as anthropology, economics, political science and public administration; psychology; and sociology are not included. Counts of both NS&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are not included.

Degree data reflect the location of the degree-granting institution, not the state in which degree-earning students permanently reside. The year reflects the end date of the academic year. For example, data for 2009 represent degrees conferred during the 2008–09 academic year. All degree data are actual counts.

Table 8-20
Natural sciences and engineering degrees as a percentage of higher education degrees conferred, by state: 2000, 2005, and 2009

State	NS&E degrees			All higher education degrees			NS&E/higher education degrees (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	283,371	331,247	353,509	1,739,739	2,066,513	2,322,054	16.3	16.0	15.2
Alabama	4,464	4,732	5,261	29,848	32,180	35,725	15.0	14.7	14.7
Alaska	360	419	475	1,901	2,107	2,267	18.9	19.9	21.0
Arizona	4,063	6,343	6,989	31,863	49,921	72,140	12.8	12.7	9.7
Arkansas	1,734	2,022	1,970	11,916	14,291	16,089	14.6	14.1	12.2
California	30,833	38,181	40,990	171,337	207,416	230,605	18.0	18.4	17.8
Colorado	6,823	7,663	7,827	31,689	38,125	43,834	21.5	20.1	17.9
Connecticut	3,007	3,634	4,624	23,703	26,359	29,078	12.7	13.8	15.9
Delaware	917	980	1,069	6,296	7,512	8,118	14.6	13.0	13.2
District of Columbia	2,091	2,561	2,949	14,433	18,348	22,525	14.5	14.0	13.1
Florida	9,942	12,636	15,036	71,408	92,917	112,165	13.9	13.6	13.4
Georgia	7,099	8,354	9,025	40,661	49,851	57,165	17.5	16.8	15.8
Hawaii	1,004	1,011	1,109	6,986	7,497	8,001	14.4	13.5	13.9
Idaho	1,272	1,568	1,797	5,943	9,057	10,816	21.4	17.3	16.6
Illinois	13,053	16,027	15,937	84,112	102,657	111,875	15.5	15.6	14.2
Indiana	6,723	7,637	7,493	41,655	49,048	54,032	16.1	15.6	13.9
Iowa	3,939	4,205	4,633	23,165	25,774	33,315	17.0	16.3	13.9
Kansas	3,196	3,557	3,290	19,617	22,348	24,284	16.3	15.9	13.5
Kentucky	2,819	3,215	3,392	20,865	24,937	28,070	13.5	12.9	12.1
Louisiana	4,357	4,895	4,260	26,338	28,930	28,256	16.5	16.9	15.1
Maine	1,228	1,272	1,305	6,916	8,188	8,717	17.8	15.5	15.0
Maryland	6,854	9,110	9,142	33,753	40,381	44,369	20.3	22.6	20.6
Massachusetts	11,309	12,222	13,219	69,410	76,108	83,467	16.3	16.1	15.8
Michigan	11,873	13,474	13,861	67,567	75,675	78,332	17.6	17.8	17.7
Minnesota	5,056	6,333	6,873	31,839	42,566	52,323	15.9	14.9	13.1
Mississippi	2,195	2,225	2,427	14,598	15,931	17,023	15.0	14.0	14.3
Missouri	5,974	6,935	7,182	43,783	52,849	59,466	13.6	13.1	12.1
Montana	1,458	1,455	1,529	6,187	6,416	6,559	23.6	22.7	23.3
Nebraska	1,958	2,212	2,393	14,008	16,427	17,411	14.0	13.5	13.7
Nevada	756	1,035	1,326	5,813	7,776	9,884	13.0	13.3	13.4
New Hampshire	1,656	1,563	1,730	10,330	11,025	12,375	16.0	14.2	14.0
New Jersey	7,469	7,859	8,283	37,278	45,515	49,544	20.0	17.3	16.7
New Mexico	1,704	2,015	1,982	9,664	10,874	11,366	17.6	18.5	17.4
New York	20,638	24,534	25,832	146,896	176,054	193,777	14.0	13.9	13.3
North Carolina	8,070	9,084	10,110	46,045	52,192	60,854	17.5	17.4	16.6
North Dakota	1,026	1,087	1,147	5,798	6,454	7,128	17.7	16.8	16.1
Ohio	10,671	11,425	11,767	68,854	79,349	83,813	15.5	14.4	14.0
Oklahoma	3,366	3,821	3,740	21,374	24,398	25,995	15.7	15.7	14.4
Oregon	3,224	3,852	3,947	19,647	23,492	24,858	16.4	16.4	15.9
Pennsylvania	15,119	18,344	19,701	90,495	107,174	119,761	16.7	17.1	16.5
Rhode Island	1,589	1,914	1,988	10,524	11,883	13,002	15.1	16.1	15.3
South Carolina	3,417	3,971	3,967	20,995	24,268	26,666	16.3	16.4	14.9
South Dakota	1,142	1,324	1,253	5,456	6,077	6,377	20.9	21.8	19.6
Tennessee	4,430	4,560	5,083	31,502	35,453	40,553	14.1	12.9	12.5
Texas	17,004	20,489	22,601	103,283	124,122	142,321	16.5	16.5	15.9
Utah	3,541	4,327	4,699	20,866	25,382	27,003	17.0	17.0	17.4
Vermont	1,008	1,097	1,365	6,350	6,638	8,031	15.9	16.5	17.0
Virginia	8,627	8,689	10,456	45,870	51,210	60,840	18.8	17.0	17.2
Washington	5,009	5,981	6,415	32,085	37,831	40,136	15.6	15.8	16.0
West Virginia	1,571	1,764	2,042	11,144	12,522	15,787	14.1	14.1	12.9
Wisconsin	6,105	7,124	7,466	35,426	40,806	43,694	17.2	17.5	17.1
Wyoming	628	510	552	2,247	2,202	2,262	27.9	23.2	24.4
Puerto Rico	3,314	3,244	3,586	19,261	21,111	23,501	17.2	15.4	15.3

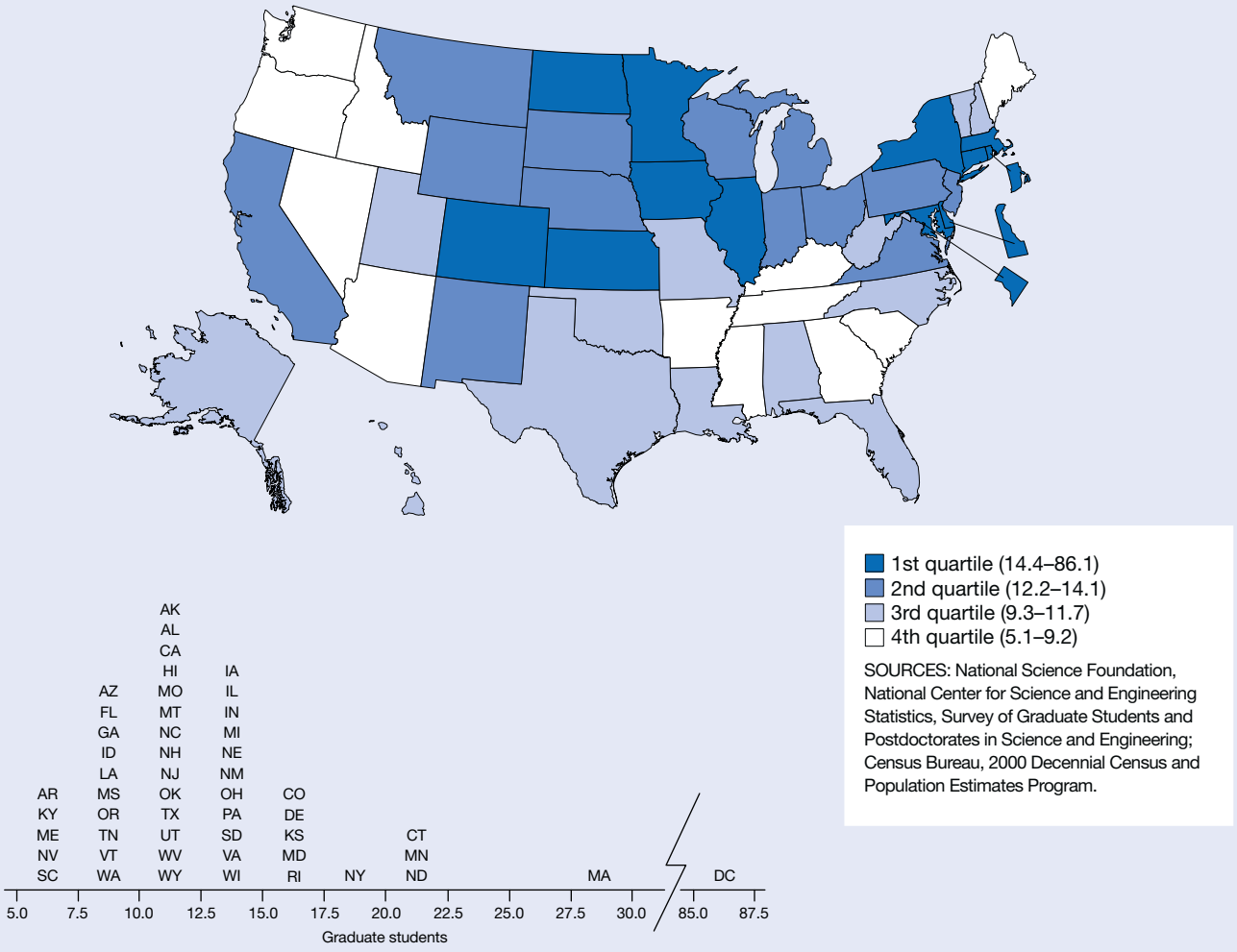
NS&E = natural sciences and engineering

NOTES: NS&E degrees include bachelor's, master's, and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering. All higher education degrees include bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Graduate Students per 1,000 Individuals 25–34 Years Old

Figure 8-21
Science and engineering graduate students per 1,000 individuals 25–34 years old: 2009



Findings

- The number of S&E graduate students in the United States grew from approximately 411,000 in 2000 to 523,000 in 2009, a 27% increase.
- Among the 50 states, the value of this indicator ranged from 5.1 to 29.4.
- Growth in the number of S&E graduate students was most significant in California during this period. Other states with sizeable increases included Texas, New York, Minnesota, and Florida.

Graduate students in S&E fields may become the technical leaders of the future. This indicator is a relative measure of a state's population with graduate training in S&E and is defined as the ratio of S&E graduate students to a state's population ages 25–34.

Graduate students are counted on the basis of their university enrollment and include state residents, residents of other states, and noncitizens. The cohort includes all state residents ages 25–34 and was chosen to approximate the age of most graduate students.

Data on S&E graduate students are counts obtained from all academic institutions in the United States that offer doctoral or master's degree programs in any S&E field, including the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Graduate students enrolled in schools of nursing, public health, dentistry, veterinary medicine, and other health-related disciplines are not included.

Estimates of the population ages 25–34 years old are provided by the U.S. Census Bureau. Small differences in the value of the indicator between states or across years generally are not meaningful.

Table 8-21
Science and engineering graduate students per 1,000 individuals 25–34 years old, by state: 2000, 2005, and 2009

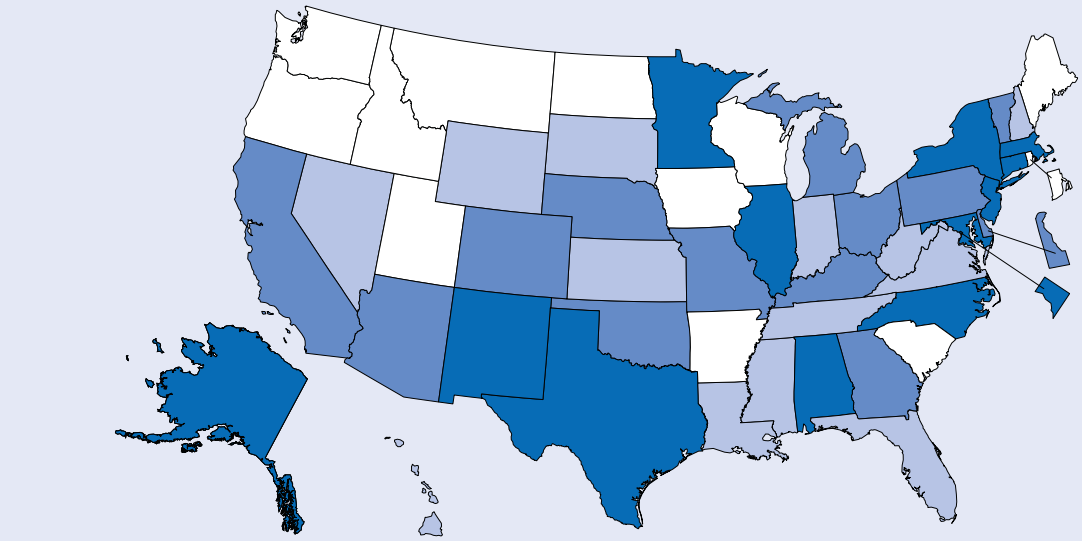
State	S&E graduate students			Population 25–34 years old			S&E graduate students/1,000 individuals 25–34 years old		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	410,505	474,550	522,511	39,825,518	39,712,639	41,566,322	10.3	11.9	12.6
Alabama	5,161	6,232	6,562	600,351	593,380	619,371	8.6	10.5	10.6
Alaska	597	806	1,064	89,013	92,286	106,145	6.7	8.7	10.0
Arizona	6,477	6,976	8,161	744,892	864,337	956,944	8.7	8.1	8.5
Arkansas	1,958	2,447	2,799	351,690	368,207	389,042	5.6	6.6	7.2
California	53,437	63,837	66,695	5,233,641	5,223,518	5,385,409	10.2	12.2	12.4
Colorado	8,688	8,997	11,000	665,276	676,923	734,263	13.1	13.3	15.0
Connecticut	6,266	6,973	8,660	450,434	405,974	411,196	13.9	17.2	21.1
Delaware	1,414	1,760	1,907	108,699	110,244	115,495	13.0	16.0	16.5
District of Columbia	7,126	8,662	9,700	101,272	102,601	112,704	70.4	84.4	86.1
Florida	15,463	19,126	22,486	2,084,041	2,229,778	2,357,049	7.4	8.6	9.5
Georgia	8,809	10,675	11,151	1,300,057	1,329,899	1,392,988	6.8	8.0	8.0
Hawaii	1,412	1,892	2,013	170,502	176,998	191,254	8.3	10.7	10.5
Idaho	1,309	2,013	1,933	169,287	186,405	209,877	7.7	10.8	9.2
Illinois	22,964	23,387	25,617	1,806,793	1,745,946	1,783,102	12.7	13.4	14.4
Indiana	7,931	9,648	10,489	828,362	817,981	838,888	9.6	11.8	12.5
Iowa	4,646	5,020	5,463	361,434	345,064	367,097	12.9	14.5	14.9
Kansas	5,740	5,804	5,574	347,757	337,097	368,979	16.5	17.2	15.1
Kentucky	3,390	4,625	4,076	566,024	562,610	579,199	6.0	8.2	7.0
Louisiana	5,496	4,809	5,824	597,966	593,933	624,512	9.2	8.1	9.3
Maine	588	684	760	156,941	148,575	149,643	3.7	4.6	5.1
Maryland	8,995	11,228	12,453	746,862	729,811	756,962	12.0	15.4	16.5
Massachusetts	19,536	22,638	25,120	924,695	843,944	855,592	21.1	26.8	29.4
Michigan	15,080	15,454	16,072	1,357,578	1,261,427	1,202,738	11.1	12.3	13.4
Minnesota	6,749	10,685	14,484	671,894	653,869	699,621	10.0	16.3	20.7
Mississippi	2,628	3,175	3,246	380,294	379,067	393,163	6.9	8.4	8.3
Missouri	5,947	7,278	8,369	736,623	739,026	785,730	8.1	9.8	10.7
Montana	1,199	1,454	1,468	102,764	104,944	120,074	11.7	13.9	12.2
Nebraska	2,452	2,811	3,272	222,460	216,423	232,221	11.0	13.0	14.1
Nevada	1,423	1,992	2,137	308,307	357,001	394,105	4.6	5.6	5.4
New Hampshire	1,340	1,448	1,544	159,784	149,554	149,648	8.4	9.7	10.3
New Jersey	11,135	12,267	13,580	1,186,931	1,112,730	1,110,420	9.4	11.0	12.2
New Mexico	3,109	3,762	3,792	233,360	250,621	277,897	13.3	15.0	13.6
New York	37,782	42,399	46,786	2,749,299	2,602,535	2,649,054	13.7	16.3	17.7
North Carolina	10,034	12,167	14,457	1,212,550	1,187,546	1,235,447	8.3	10.2	11.7
North Dakota	1,053	1,512	1,811	76,253	71,313	81,735	13.8	21.2	22.2
Ohio	16,092	19,054	19,580	1,513,069	1,470,729	1,478,233	10.6	13.0	13.2
Oklahoma	3,478	4,274	5,095	449,552	456,812	504,985	7.7	9.4	10.1
Oregon	3,815	4,387	4,737	469,904	483,361	525,411	8.1	9.1	9.0
Pennsylvania	18,300	20,209	21,542	1,552,979	1,489,438	1,538,441	11.8	13.6	14.0
Rhode Island	1,709	1,971	2,127	140,153	134,692	131,818	12.2	14.6	16.1
South Carolina	3,185	3,339	3,499	559,245	565,038	598,990	5.7	5.9	5.8
South Dakota	866	930	1,452	90,667	91,888	102,810	9.6	10.1	14.1
Tennessee	5,366	6,585	6,431	813,532	820,169	848,633	6.6	8.0	7.6
Texas	27,855	32,788	37,774	3,164,710	3,339,356	3,647,847	8.8	9.8	10.4
Utah	3,821	4,884	4,929	327,177	381,597	441,598	11.7	12.8	11.2
Vermont	627	644	655	74,260	67,274	69,085	8.4	9.6	9.5
Virginia	11,552	12,566	14,624	1,035,588	1,027,412	1,084,710	11.2	12.2	13.5
Washington	5,905	6,570	7,534	839,575	851,102	948,773	7.0	7.7	7.9
West Virginia	2,024	2,247	2,273	227,512	224,330	225,178	8.9	10.0	10.1
Wisconsin	7,822	8,572	8,817	704,005	675,890	707,393	11.1	12.7	12.5
Wyoming	754	887	917	59,504	61,984	74,853	12.7	14.3	12.3
Puerto Rico	2,944	3,661	3,068	534,332	550,170	556,543	5.5	6.7	5.5

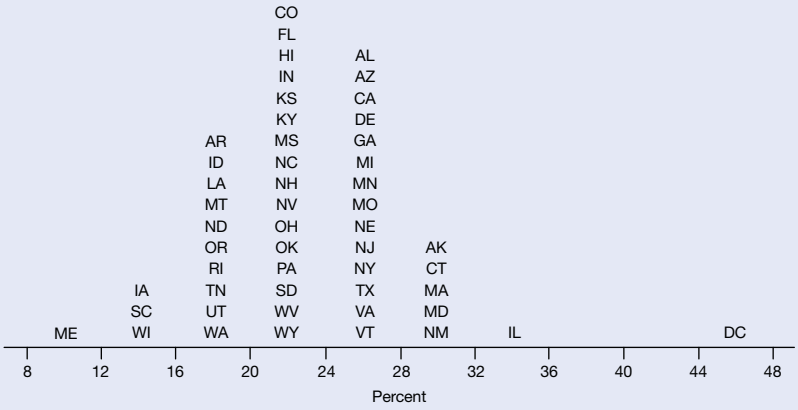
NOTE: S&E graduate students include students pursuing graduate degrees in physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

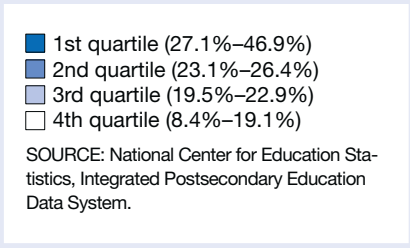
SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science Engineering; Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).

Advanced Science and Engineering Degrees as a Percentage of S&E Degrees Conferred

Figure 8-22
Advanced science and engineering degrees as a percentage of S&E degrees conferred: 2009







SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System.

Findings

- In 2009, nearly 167,000 advanced S&E degrees were awarded nationwide, 38% more degrees than were awarded in 2000. The share of advanced degrees as a percentage of all S&E degrees conferred increased by 6% between 2000 and 2009.
- In 2009, the value of this indicator for individual states ranged from 8.4 % to 32.2% of S&E graduates completing training at the master's or doctoral level. California produced the largest number of advanced S&E degrees, consistent over the decade and approximately 110 times the number produced in Wyoming.
- Between 2000 and 2009, 33 states showed increases in the share of their S&E graduates completing training at the master's or doctoral level and 16 states and the District of Columbia showed decreases.
- In states with few S&E graduate programs, the number of advanced S&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of S&E graduate students.

This indicator represents the extent to which a state's higher education programs in S&E are concentrated at the graduate level. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Advanced S&E degrees include master's and doctoral degrees. Total S&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced S&E degrees by the total number of S&E degrees awarded by the higher education institutions within the state. The number of degrees are actual counts provided by the National Center of Education Statistics.

Table 8-22
Advanced science and engineering degrees as a percentage of S&E degrees conferred, by state: 2000, 2005, and 2009

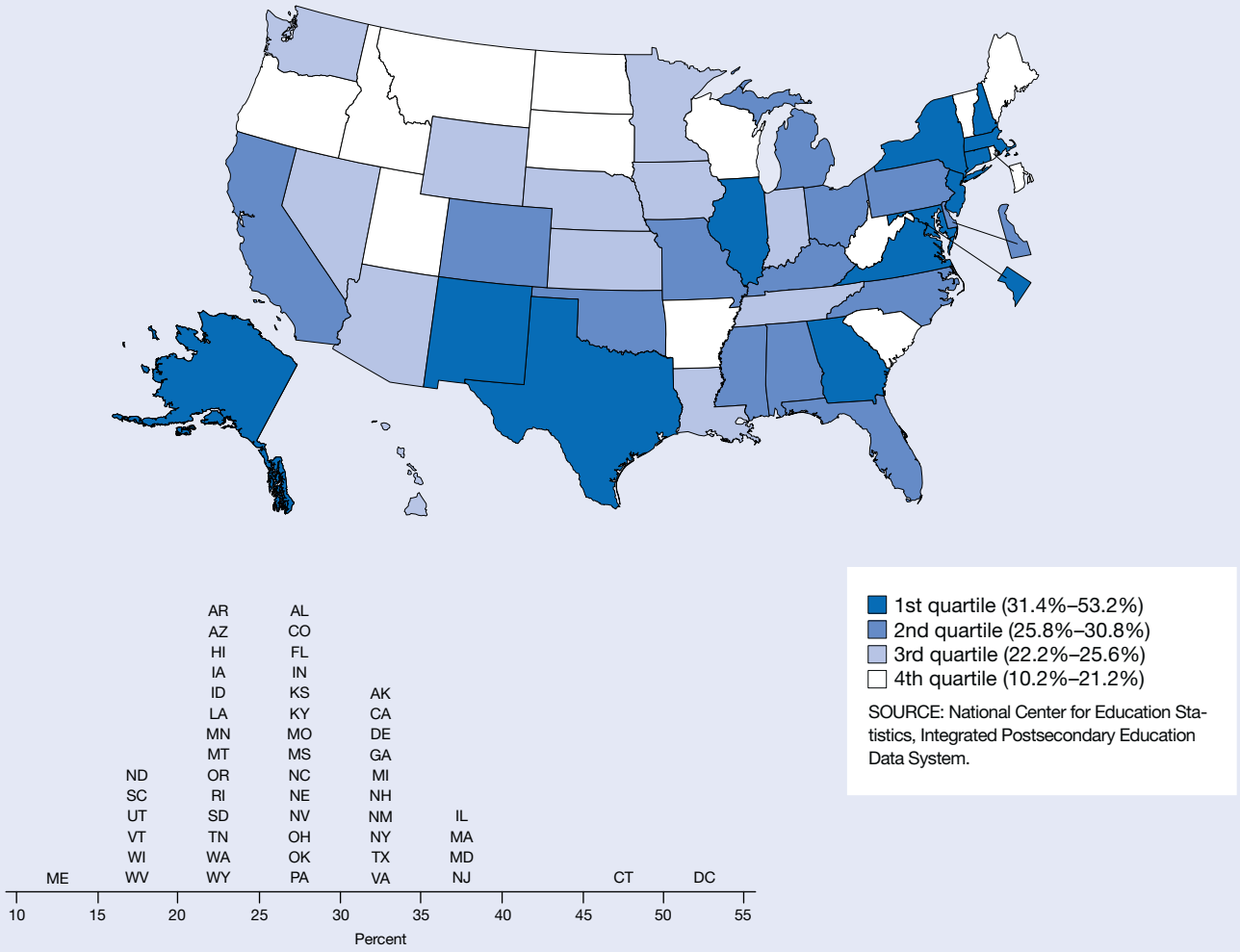
State	Advanced S&E degrees			All S&E degrees			Advanced S&E/ all S&E degrees (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	120,997	148,629	166,714	515,298	614,694	667,790	23.5	24.2	25.0
Alabama	1,937	2,271	2,409	7,512	8,038	8,899	25.8	28.3	27.1
Alaska	185	236	243	578	676	802	32.0	34.9	30.3
Arizona	1,736	1,872	3,259	6,890	9,613	13,432	25.2	19.5	24.3
Arkansas	436	558	639	2,828	3,306	3,390	15.4	16.9	18.8
California	15,497	19,021	21,198	61,903	77,557	84,579	25.0	24.5	25.1
Colorado	2,911	3,370	3,415	11,733	13,745	14,280	24.8	24.5	23.9
Connecticut	1,748	2,209	2,812	6,887	8,154	9,615	25.4	27.1	29.2
Delaware	394	507	553	1,940	2,163	2,241	20.3	23.4	24.7
District of Columbia	2,825	3,317	3,968	5,740	7,490	8,469	49.2	44.3	46.9
Florida	4,199	5,445	6,396	18,293	24,845	29,004	23.0	21.9	22.1
Georgia	2,764	3,453	3,993	11,754	14,807	15,775	23.5	23.3	25.3
Hawaii	575	558	582	2,235	2,412	2,656	25.7	23.1	21.9
Idaho	331	424	457	1,823	2,384	2,797	18.2	17.8	16.3
Illinois	6,504	8,294	9,254	22,464	27,237	28,725	29.0	30.5	32.2
Indiana	2,483	2,840	3,040	11,404	13,317	13,251	21.8	21.3	22.9
Iowa	1,055	1,261	1,423	6,611	7,378	9,079	16.0	17.1	15.7
Kansas	1,160	1,355	1,321	5,317	6,068	5,920	21.8	22.3	22.3
Kentucky	938	1,551	1,537	5,091	6,088	6,481	18.4	25.5	23.7
Louisiana	1,430	1,773	1,417	6,998	7,849	7,199	20.4	22.6	19.7
Maine	185	196	231	2,302	2,550	2,749	8.0	7.7	8.4
Maryland	3,637	4,618	5,121	12,235	15,675	16,514	29.7	29.5	31.0
Massachusetts	6,600	7,662	8,249	22,662	25,251	26,712	29.1	30.3	30.9
Michigan	4,788	5,744	5,931	18,430	21,335	22,804	26.0	26.9	26.0
Minnesota	1,609	2,644	3,827	9,043	11,915	13,887	17.8	22.2	27.6
Mississippi	628	793	901	3,397	3,577	3,937	18.5	22.2	22.9
Missouri	2,796	3,452	3,556	10,965	12,984	13,464	25.5	26.6	26.4
Montana	368	447	424	2,102	2,254	2,298	17.5	19.8	18.5
Nebraska	647	808	1,060	3,304	3,847	4,193	19.6	21.0	25.3
Nevada	315	482	546	1,365	1,963	2,585	23.1	24.6	21.1
New Hampshire	554	634	755	3,342	3,460	3,684	16.6	18.3	20.5
New Jersey	3,118	3,811	4,507	13,940	15,667	16,535	22.4	24.3	27.3
New Mexico	697	877	947	2,636	3,065	3,255	26.4	28.6	29.1
New York	10,760	13,828	14,817	42,901	51,470	54,412	25.1	26.9	27.2
North Carolina	2,630	3,177	3,838	14,651	16,665	18,671	18.0	19.1	20.6
North Dakota	190	234	284	1,519	1,539	1,610	12.5	15.2	17.6
Ohio	4,249	4,802	4,872	18,123	20,287	21,129	23.4	23.7	23.1
Oklahoma	1,981	1,624	1,506	5,982	6,342	6,384	33.1	25.6	23.6
Oregon	1,227	1,544	1,430	6,608	7,805	7,975	18.6	19.8	17.9
Pennsylvania	5,448	6,755	8,023	26,563	31,478	34,537	20.5	21.5	23.2
Rhode Island	509	610	701	3,012	3,447	3,783	16.9	17.7	18.5
South Carolina	957	1,071	1,128	5,953	6,855	7,279	16.1	15.6	15.5
South Dakota	307	472	419	1,813	1,966	1,990	16.9	24.0	21.1
Tennessee	1,497	1,593	1,874	8,029	8,749	9,601	18.6	18.2	19.5
Texas	7,131	9,318	10,473	27,962	34,612	38,196	25.5	26.9	27.4
Utah	1,044	1,283	1,353	6,289	8,153	8,339	16.6	15.7	16.2
Vermont	409	516	795	2,230	2,508	3,144	18.3	20.6	25.3
Virginia	3,366	4,062	5,664	16,299	17,810	20,822	20.7	22.8	27.2
Washington	1,815	2,328	2,523	9,720	12,449	13,215	18.7	18.7	19.1
West Virginia	546	660	843	2,750	2,945	3,772	19.9	22.4	22.3
Wisconsin	1,656	2,069	2,010	10,260	12,187	12,881	16.1	17.0	15.6
Wyoming	225	200	190	910	757	839	24.7	26.4	22.6
Puerto Rico	620	775	1,056	4,807	4,817	5,293	12.9	16.1	20.0

NOTES: Advanced S&E degrees include only master's and doctorate. All S&E degrees include bachelor's, master's, and doctorate. S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Advanced Natural Sciences and Engineering Degrees as a Percentage of NS&E Degrees Conferred

Figure 8-23
Advanced natural sciences and engineering degrees as a percentage of NS&E degrees conferred: 2009



Findings

- In 2009, more than 104,000 advanced natural sciences and engineering (NS&E) degrees were awarded nationwide. This total represented approximately 37% more than were awarded in 2000. The share of advanced degrees as a percentage of all NS&E degrees conferred rose by 10% between 2000 and 2009.
- In 2009, the value of this indicator ranged from a low of 10.2% to a high of 45.1% of NS&E graduates completing training at the master's or doctoral level.
- Nationally, about 62% of all advanced S&E degrees were in NS&E fields in 2009, nearly unchanged from a decade ago in 2000.
- In states with few NS&E graduate programs, the number of advanced NS&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of NS&E graduate students.

This indicator represents the extent to which a state's higher education programs in natural sciences and engineering (NS&E) are concentrated at the graduate level. NS&E fields include the physical, life, earth, ocean, atmospheric, and computer sciences; mathematics; and engineering. The social sciences, including anthropology, economics, political science and public administration, psychology, and sociology, are not included. Advanced NS&E degrees include master's and doctoral degrees. Total NS&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced NS&E degrees by the total number of NS&E degrees awarded by the higher education institutions within the state.

The number of degrees are actual counts provided by the National Center of Education Statistics.

Table 8-23
Advanced natural sciences and engineering degrees as a percentage of NS&E degrees conferred, by state: 2000, 2005, and 2009

State	Advanced NS&E degrees			NS&E degrees conferred			Advanced NS&E degrees/ NS&E degrees conferred (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	75,996	94,547	104,089	283,371	331,247	353,509	26.8	28.5	29.4
Alabama	908	1,221	1,370	4,464	4,732	5,261	20.3	25.8	26.0
Alaska	120	171	162	360	419	475	33.3	40.8	34.1
Arizona	1,135	1,274	1,705	4,063	6,343	6,989	27.9	20.1	24.4
Arkansas	294	392	407	1,734	2,022	1,970	17.0	19.4	20.7
California	8,797	11,395	12,604	30,833	38,181	40,990	28.5	29.8	30.7
Colorado	2,081	2,188	2,113	6,823	7,663	7,827	30.5	28.6	27.0
Connecticut	1,155	1,518	2,084	3,007	3,634	4,624	38.4	41.8	45.1
Delaware	221	286	329	917	980	1,069	24.1	29.2	30.8
District of Columbia	1,202	1,244	1,569	2,091	2,561	2,949	57.5	48.6	53.2
Florida	2,589	3,539	4,267	9,942	12,636	15,036	26.0	28.0	28.4
Georgia	1,909	2,291	2,835	7,099	8,354	9,025	26.9	27.4	31.4
Hawaii	285	257	267	1,004	1,011	1,109	28.4	25.4	24.1
Idaho	259	334	360	1,272	1,568	1,797	20.4	21.3	20.0
Illinois	4,082	5,025	5,857	13,053	16,027	15,937	31.3	31.4	36.8
Indiana	1,610	1,840	1,920	6,723	7,637	7,493	23.9	24.1	25.6
Iowa	804	956	1,070	3,939	4,205	4,633	20.4	22.7	23.1
Kansas	760	920	827	3,196	3,557	3,290	23.8	25.9	25.1
Kentucky	553	922	889	2,819	3,215	3,392	19.6	28.7	26.2
Louisiana	962	1,295	1,044	4,357	4,895	4,260	22.1	26.5	24.5
Maine	137	136	133	1,228	1,272	1,305	11.2	10.7	10.2
Maryland	2,432	3,199	3,473	6,854	9,110	9,142	35.5	35.1	38.0
Massachusetts	3,981	4,599	5,004	11,309	12,222	13,219	35.2	37.6	37.9
Michigan	3,558	4,300	4,241	11,873	13,474	13,861	30.0	31.9	30.6
Minnesota	989	1,472	1,527	5,056	6,333	6,873	19.6	23.2	22.2
Mississippi	462	595	670	2,195	2,225	2,427	21.0	26.7	27.6
Missouri	1,207	1,585	1,853	5,974	6,935	7,182	20.2	22.9	25.8
Montana	285	328	306	1,458	1,455	1,529	19.5	22.5	20.0
Nebraska	377	570	611	1,958	2,212	2,393	19.3	25.8	25.5
Nevada	208	296	337	756	1,035	1,326	27.5	28.6	25.4
New Hampshire	375	433	544	1,656	1,563	1,730	22.6	27.7	31.4
New Jersey	2,220	2,505	2,907	7,469	7,859	8,283	29.7	31.9	35.1
New Mexico	461	623	676	1,704	2,015	1,982	27.1	30.9	34.1
New York	6,187	7,829	8,736	20,638	24,534	25,832	30.0	31.9	33.8
North Carolina	1,898	2,310	2,802	8,070	9,084	10,110	23.5	25.4	27.7
North Dakota	133	174	218	1,026	1,087	1,147	13.0	16.0	19.0
Ohio	2,843	3,319	3,263	10,671	11,425	11,767	26.6	29.1	27.7
Oklahoma	875	1,185	1,013	3,366	3,821	3,740	26.0	31.0	27.1
Oregon	784	1,021	879	3,224	3,852	3,947	24.3	26.5	22.3
Pennsylvania	3,448	4,625	5,248	15,119	18,344	19,701	22.8	25.2	26.6
Rhode Island	353	383	422	1,589	1,914	1,988	22.2	20.0	21.2
South Carolina	733	841	768	3,417	3,971	3,967	21.5	21.2	19.4
South Dakota	161	285	257	1,142	1,324	1,253	14.1	21.5	20.5
Tennessee	975	1,019	1,162	4,430	4,560	5,083	22.0	22.3	22.9
Texas	5,136	6,797	7,416	17,004	20,489	22,601	30.2	33.2	32.8
Utah	724	915	933	3,541	4,327	4,699	20.4	21.1	19.9
Vermont	168	232	263	1,008	1,097	1,365	16.7	21.1	19.3
Virginia	2,213	2,379	3,360	8,627	8,689	10,456	25.7	27.4	32.1
Washington	1,159	1,366	1,430	5,009	5,981	6,415	23.1	22.8	22.3
West Virginia	363	476	405	1,571	1,764	2,042	23.1	27.0	19.8
Wisconsin	1,254	1,550	1,422	6,105	7,124	7,466	20.5	21.8	19.0
Wyoming	171	132	131	628	510	552	27.2	25.9	23.7
Puerto Rico	301	396	547	3,314	3,244	3,586	9.1	12.2	15.3

NS&E = natural sciences and engineering

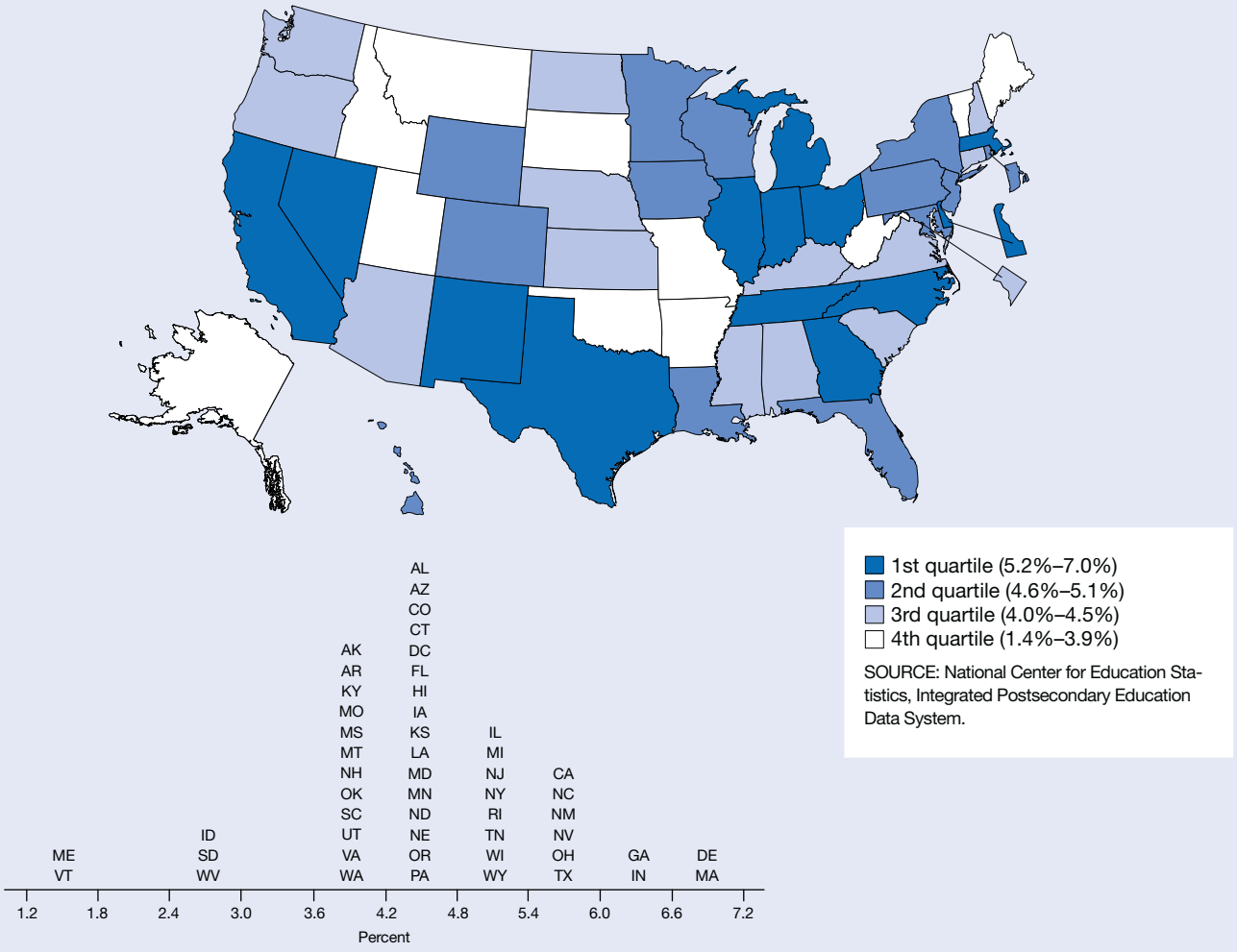
NOTES: Advanced NS&E degrees include only master's and doctorate. NS&E degrees conferred includes bachelor's, master's, and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2012

Science and Engineering Doctoral Degrees as a Percentage of S&E Degrees Conferred

Figure 8-24
Science and engineering doctoral degrees as a percentage of S&E degrees conferred: 2009



Findings

- The number of S&E doctoral degrees awarded nationwide rose from 25,000 in 2000 to 33,000 in 2009, an increase of 31%. California showed the largest increase in the number of S&E doctorates awarded during this period.
- Nationally, about 5% of the S&E degrees awarded have been doctoral degrees. In 2009, the value of this indicator for individual states ranged from a low of 1.4% to a high of 7.0% of S&E graduates completing training at the doctorate level.
- In states with a small number of S&E graduate programs, the number of S&E doctoral degrees awarded varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small numbers of S&E doctorates.

This indicator represents the extent to which a state's higher education programs in S&E are focused on producing individuals with the highest level of technical expertise. The academic and technical leaders of the future are often drawn from individuals receiving S&E doctoral degrees. S&E fields include the physical, life, earth, ocean, atmospheric, computer, and social sciences; mathematics; engineering; and psychology. Total S&E degrees conferred include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of doctoral degrees awarded in S&E fields by the total number of S&E degrees awarded by the higher education institutions within the state. The number of degrees are counts provided by the National Center of Education Statistics.

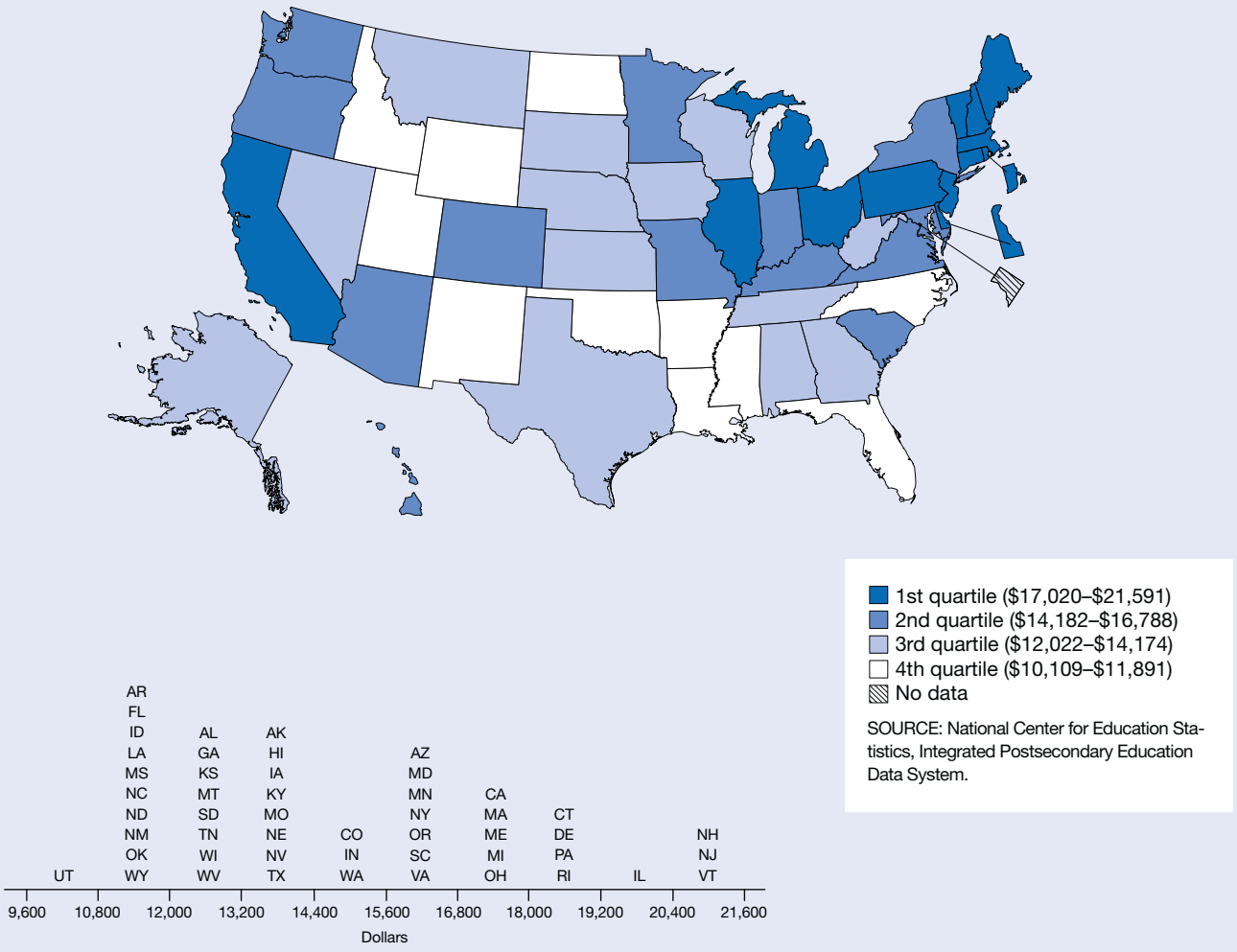
Table 8-24
Science and engineering doctoral degrees as a percentage of S&E degrees conferred, by state: 2000, 2005, and 2009

State	S&E doctoral degrees			S&E degrees conferred			S&E doctoral degrees/ S&E degrees conferred (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	25,350	28,398	33,137	515,298	614,694	667,790	4.9	4.6	5.0
Alabama	281	322	384	7,512	8,038	8,899	3.7	4.0	4.3
Alaska	13	20	29	578	676	802	2.2	3.0	3.6
Arizona	431	466	598	6,890	9,613	13,432	6.3	4.8	4.5
Arkansas	67	111	127	2,828	3,306	3,390	2.4	3.4	3.7
California	3,553	3,939	4,724	61,903	77,557	84,579	5.7	5.1	5.6
Colorado	527	708	659	11,733	13,745	14,280	4.5	5.2	4.6
Connecticut	413	433	435	6,887	8,154	9,615	6.0	5.3	4.5
Delaware	112	116	151	1,940	2,163	2,241	5.8	5.4	6.7
District of Columbia	355	364	385	5,740	7,490	8,469	6.2	4.9	4.5
Florida	878	1,112	1,342	18,293	24,845	29,004	4.8	4.5	4.6
Georgia	552	719	964	11,754	14,807	15,775	4.7	4.9	6.1
Hawaii	126	114	121	2,235	2,412	2,656	5.6	4.7	4.6
Idaho	56	49	73	1,823	2,384	2,797	3.1	2.1	2.6
Illinois	1,438	1,470	1,534	22,464	27,237	28,725	6.4	5.4	5.3
Indiana	646	659	850	11,404	13,317	13,251	5.7	4.9	6.4
Iowa	319	321	428	6,611	7,378	9,079	4.8	4.4	4.7
Kansas	223	230	260	5,317	6,068	5,920	4.2	3.8	4.4
Kentucky	188	241	256	5,091	6,088	6,481	3.7	4.0	4.0
Louisiana	345	312	330	6,998	7,849	7,199	4.9	4.0	4.6
Maine	39	24	42	2,302	2,550	2,749	1.7	0.9	1.5
Maryland	567	688	783	12,235	15,675	16,514	4.6	4.4	4.7
Massachusetts	1,433	1,562	1,877	22,662	25,251	26,712	6.3	6.2	7.0
Michigan	941	1,019	1,200	18,430	21,335	22,804	5.1	4.8	5.3
Minnesota	463	609	645	9,043	11,915	13,887	5.1	5.1	4.6
Mississippi	144	140	161	3,397	3,577	3,937	4.2	3.9	4.1
Missouri	415	491	495	10,965	12,984	13,464	3.8	3.8	3.7
Montana	41	65	83	2,102	2,254	2,298	2.0	2.9	3.6
Nebraska	142	154	182	3,304	3,847	4,193	4.3	4.0	4.3
Nevada	78	92	142	1,365	1,963	2,585	5.7	4.7	5.5
New Hampshire	102	150	149	3,342	3,460	3,684	3.1	4.3	4.0
New Jersey	650	641	808	13,940	15,667	16,535	4.7	4.1	4.9
New Mexico	136	159	184	2,636	3,065	3,255	5.2	5.2	5.7
New York	2,237	2,440	2,605	42,901	51,470	54,412	5.2	4.7	4.8
North Carolina	652	790	1,010	14,651	16,665	18,671	4.5	4.7	5.4
North Dakota	41	42	68	1,519	1,539	1,610	2.7	2.7	4.2
Ohio	963	1,022	1,146	18,123	20,287	21,129	5.3	5.0	5.4
Oklahoma	205	205	251	5,982	6,342	6,384	3.4	3.2	3.9
Oregon	254	272	336	6,608	7,805	7,975	3.8	3.5	4.2
Pennsylvania	1,135	1,432	1,633	26,563	31,478	34,537	4.3	4.5	4.7
Rhode Island	153	167	193	3,012	3,447	3,783	5.1	4.8	5.1
South Carolina	198	234	294	5,953	6,855	7,279	3.3	3.4	4.0
South Dakota	26	38	49	1,813	1,966	1,990	1.4	1.9	2.5
Tennessee	356	354	496	8,029	8,749	9,601	4.4	4.0	5.2
Texas	1,495	1,727	2,116	27,962	34,612	38,196	5.3	5.0	5.5
Utah	238	251	303	6,289	8,153	8,339	3.8	3.1	3.6
Vermont	40	38	43	2,230	2,508	3,144	1.8	1.5	1.4
Virginia	668	758	863	16,299	17,810	20,822	4.1	4.3	4.1
Washington	365	490	544	9,720	12,449	13,215	3.8	3.9	4.1
West Virginia	80	97	93	2,750	2,945	3,772	2.9	3.3	2.5
Wisconsin	520	508	650	10,260	12,187	12,881	5.1	4.2	5.0
Wyoming	50	33	43	910	757	839	5.5	4.4	5.1
Puerto Rico	73	163	147	4,807	4,817	5,293	1.5	3.4	2.8

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Average Undergraduate Charge at Public 4-Year Institutions

Figure 8-25
Average undergraduate charge at public 4-year institutions: 2010



Findings

- During 2010, the total annual nominal charge for a full-time undergraduate student to attend a public 4-year institution averaged $15,014 nationally, an increase of 82% since 2000 in current dollars. This was equivalent to an increase of approximately 43% after adjusting for inflation.
- All states showed major increases in undergraduate charges at public institutions in 2010, compared with 2000. In several states, undergraduate charges more than doubled during this period.
- In 2010, the state average for a year of undergraduate education at a public 4-year institution ranged from a low of $10,109 to a high of $21,591.
- Tuition and required fees averaged 45% of the total charges at public 4-year institutions in 2010, but individual states had different cost structures.

The average annual charge for an undergraduate student to attend a public 4-year academic institution is one indicator of how accessible higher education is to a state's students. The annual charge includes standard in-state charges for tuition, required fees, room, and board for a full-time undergraduate student who is a resident of that state. These charges were weighted by the number of full-time undergraduates attending each public institution within the state. The total charge for all public 4-year institutions in the state was divided by the total number of full-time undergraduates attending all public 4-year institutions in the state. The year is the end date of the academic year. For example, data for 2010 represent costs for the 2009–10 academic year.

To improve educational attainment, the federal government, state governments, and academic institutions provide various kinds of financial aid that reduce the charge to students. The data in this indicator do not include any adjustments for such financial aid.

Table 8-25
Average undergraduate charge at public 4-year institutions, by state: 2000, 2005, and 2010
(Dollars)

State	2000	2005	2010
United States	8,265	11,441	15,014
Alabama	6,742	9,819	13,052
Alaska	8,333	9,936	13,281
Arizona	7,362	10,863	15,710
Arkansas	6,416	8,734	11,841
California	9,183	13,356	17,652
Colorado	7,994	10,243	15,056
Connecticut	10,136	13,824	18,331
Delaware	9,876	13,353	18,383
District of Columbia	NA	NA	NA
Florida	7,474	9,335	11,659
Georgia	7,295	9,439	12,552
Hawaii	8,056	9,131	14,182
Idaho	6,323	9,066	10,895
Illinois	9,002	12,803	19,355
Indiana	8,845	12,240	15,590
Iowa	7,210	11,541	14,174
Kansas	6,324	9,397	12,578
Kentucky	6,481	9,400	14,228
Louisiana	5,910	7,973	10,873
Maine	9,089	11,826	17,020
Maryland	10,345	14,108	16,407
Massachusetts	9,212	13,687	17,819
Michigan	9,513	12,658	17,852
Minnesota	7,665	11,958	15,730
Mississippi	6,456	9,019	11,583
Missouri	8,185	11,356	14,368
Montana	7,463	9,867	12,399
Nebraska	7,258	10,704	13,265
Nevada	7,812	10,464	13,682
New Hampshire	11,052	14,651	20,492
New Jersey	11,450	16,349	21,591
New Mexico	6,600	8,675	11,809
New York	9,998	12,441	16,147
North Carolina	6,483	9,450	11,874
North Dakota	6,994	9,011	11,891
Ohio	9,900	15,256	17,133
Oklahoma	5,735	8,451	11,444
Oregon	9,065	12,177	15,629
Pennsylvania	10,534	14,771	19,017
Rhode Island	10,595	13,541	18,509
South Carolina	7,703	12,165	16,788
South Dakota	6,520	8,944	12,022
Tennessee	6,555	9,445	12,748
Texas	7,497	10,233	13,764
Utah	6,299	8,348	10,109
Vermont	12,478	15,658	20,735
Virginia	8,619	11,616	15,616
Washington	8,314	11,902	15,189
West Virginia	7,105	9,450	12,426
Wisconsin	7,268	9,872	13,190
Wyoming	7,091	8,514	10,952
Puerto Rico	NA	NA	NA

NA = not available

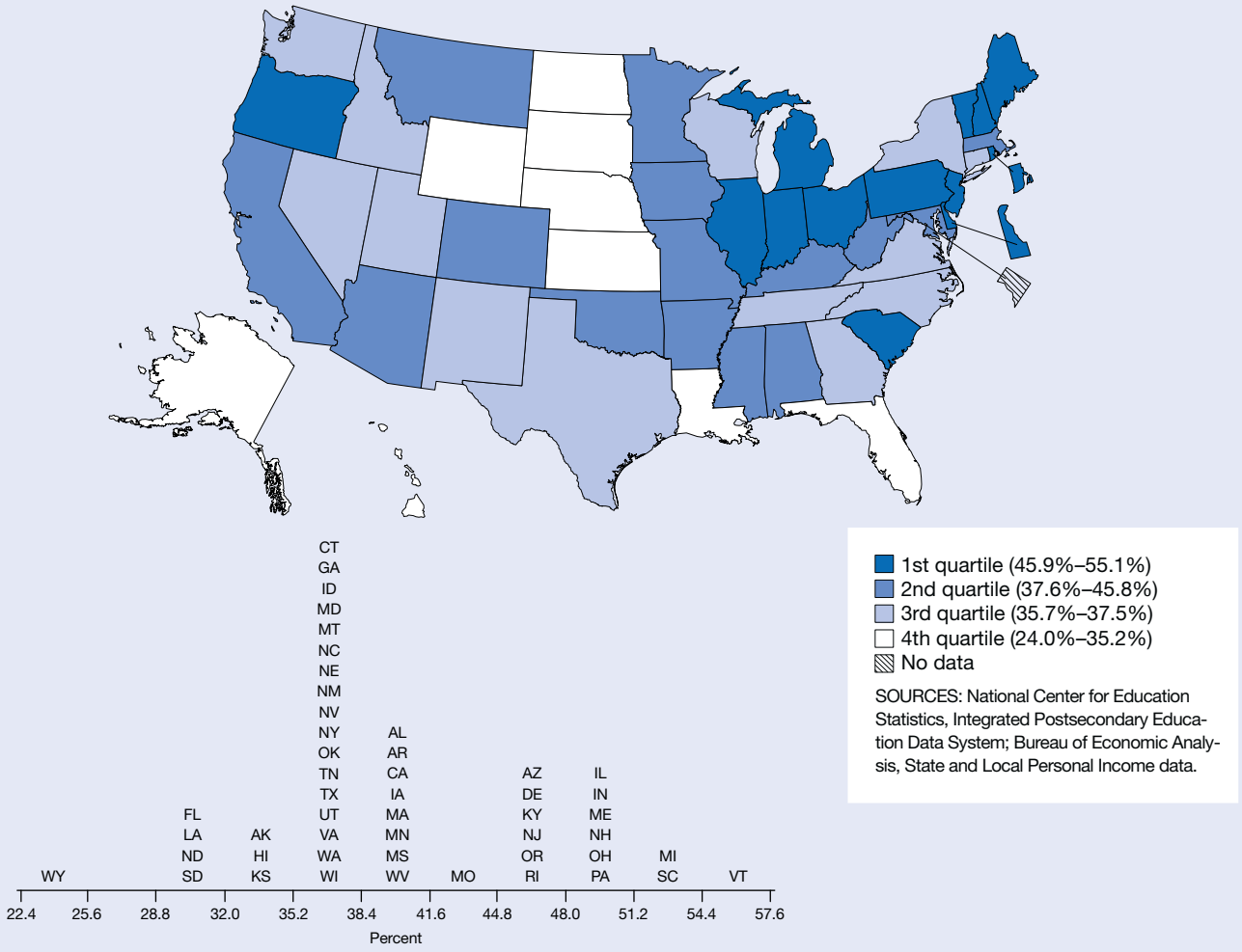
NOTES: National average for United States from *Digest of Education Statistics* data tables. Average charges for entire academic year (reported in current dollars). Tuition and fees weighted by number of full-time-equivalent undergraduates but not adjusted to reflect student residency. Room and board based on full-time students.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2012

Average Undergraduate Charge at Public 4-Year Institutions as a Percentage of Disposable Personal Income

Figure 8-26
Average undergraduate charge at public 4-year institutions as a percentage of disposable personal income: 2009



Findings

- In 2009, a year of undergraduate education at a state institution would have consumed, on average, 39.7% of a resident's disposable income, an increase from the 31.8% it would have consumed in 2000.
- The cost of a year of undergraduate education at a public institution was equivalent to one-quarter to one-half of the per capita disposable income for residents of most states in 2009.
- Wyoming is the only state to show a decrease in this indicator between 2000 and 2009.
- Residents in 14 states experienced major increases in the cost of a year of undergraduate education relative to their purchasing power (in excess of 10% of their per capita disposable income) between 2000 and 2009.

This indicator represents a broad measure of how affordable higher education at a public institution is for the average resident. It is calculated by dividing the average undergraduate charge at all public 4-year institutions in the state by the per capita disposable personal income of state residents. The average undergraduate charge includes standard in-state tuition, room, board, and required fees for a student who is a resident of the state. The year is the end date of the academic year. For example, data for 2009 represent costs for the 2008–09 academic year.

Disposable personal income is the income available to state residents for spending or saving. It is calculated as personal income minus personal current taxes paid to federal, state, and local governments.

High values indicate that a year of undergraduate education consumes a high percentage of the disposable personal income of state residents. However, the data in this indicator do not include any adjustment for financial aid that a student might receive.

Table 8-26

Average undergraduate charge at public 4-year institutions as a percentage of disposable personal income, by state: 2000, 2005, and 2009

State	Average undergraduate charge ($)			Per capita disposable personal income ($)			Undergraduate charge/disposable personal income (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	8,265	11,441	14,256	25,955	31,342	35,916	31.8	36.5	39.7
Alabama	6,742	9,819	12,183	21,357	27,031	30,758	31.6	36.3	39.6
Alaska	8,333	9,936	12,970	27,101	33,573	39,620	30.7	29.6	32.7
Arizona	7,362	10,863	14,098	22,939	28,159	30,807	32.1	38.6	45.8
Arkansas	6,416	8,734	11,708	20,034	25,344	29,861	32.0	34.5	39.2
California	9,183	13,356	15,679	27,664	33,810	38,300	33.2	39.5	40.9
Colorado	7,994	10,243	14,250	28,857	34,160	37,899	27.7	30.0	37.6
Connecticut	10,136	13,824	17,358	33,837	40,689	47,797	30.0	34.0	36.3
Delaware	9,876	13,353	17,199	26,427	32,252	36,130	37.4	41.4	47.6
District of Columbia	NA	NA	NA	33,459	47,478	60,751	NA	NA	NA
Florida	7,474	9,335	11,487	25,392	31,726	36,031	29.4	29.4	31.9
Georgia	7,295	9,439	11,532	24,606	28,653	31,096	29.6	32.9	37.1
Hawaii	8,056	9,131	13,358	25,495	31,764	38,556	31.6	28.7	34.6
Idaho	6,323	9,066	10,403	21,575	26,572	29,171	29.3	34.1	35.7
Illinois	9,002	12,803	18,228	27,877	32,972	37,913	32.3	38.8	48.1
Indiana	8,845	12,240	14,976	23,983	28,016	30,983	36.9	43.7	48.3
Iowa	7,210	11,541	13,828	24,136	29,298	34,385	29.9	39.4	40.2
Kansas	6,324	9,397	11,999	24,841	29,714	35,714	25.5	31.6	33.6
Kentucky	6,481	9,400	13,213	21,726	25,512	29,526	29.8	36.8	44.8
Louisiana	5,910	7,973	10,380	21,073	27,557	34,249	28.0	28.9	30.3
Maine	9,089	11,826	16,162	23,227	28,675	33,359	39.1	41.2	48.4
Maryland	10,345	14,108	16,112	29,231	36,787	42,902	35.4	38.4	37.6
Massachusetts	9,212	13,687	17,103	30,786	37,546	43,884	29.9	36.5	39.0
Michigan	9,513	12,658	17,034	25,285	28,924	31,475	37.6	43.8	54.1
Minnesota	7,665	11,958	15,097	27,780	33,302	37,583	27.6	35.9	40.2
Mississippi	6,456	9,019	11,093	19,491	24,795	28,387	33.1	36.4	39.1
Missouri	8,185	11,356	14,056	24,335	28,884	32,781	33.6	39.3	42.9
Montana	7,463	9,867	11,970	20,781	27,192	31,853	35.9	36.3	37.6
Nebraska	7,258	10,704	12,652	25,070	30,967	35,939	29.0	34.6	35.2
Nevada	7,812	10,464	12,824	26,882	33,743	34,914	29.1	31.0	36.7
New Hampshire	11,052	14,651	19,228	29,273	34,591	39,124	37.8	42.4	49.1
New Jersey	11,450	16,349	20,727	32,333	38,127	44,416	35.4	42.9	46.7
New Mexico	6,600	8,675	11,261	20,200	26,242	30,721	32.7	33.1	36.7
New York	9,998	12,441	14,878	28,623	34,598	40,348	34.9	36.0	36.9
North Carolina	6,483	9,450	11,354	24,253	28,546	31,635	26.7	33.1	35.9
North Dakota	6,994	9,011	11,426	23,121	29,667	37,286	30.2	30.4	30.6
Ohio	9,900	15,256	16,567	24,757	28,721	32,445	40.0	53.1	51.1
Oklahoma	5,735	8,451	12,355	21,723	27,435	32,831	26.4	30.8	37.6
Oregon	9,065	12,177	15,183	24,536	28,493	32,717	36.9	42.7	46.4
Pennsylvania	10,534	14,771	18,147	25,999	30,808	36,255	40.5	47.9	50.1
Rhode Island	10,595	13,541	17,289	25,340	32,140	37,636	41.8	42.1	45.9
South Carolina	7,703	12,165	16,137	22,165	26,368	29,900	34.8	46.1	54.0
South Dakota	6,520	8,944	11,357	23,881	30,611	35,662	27.3	29.2	31.8
Tennessee	6,555	9,445	12,057	24,011	28,810	32,135	27.3	32.8	37.5
Texas	7,497	10,233	13,222	25,166	30,175	35,472	29.8	33.9	37.3
Utah	6,299	8,348	10,301	21,454	25,554	28,856	29.4	32.7	35.7
Vermont	12,478	15,658	19,688	24,523	29,914	35,703	50.9	52.3	55.1
Virginia	8,619	11,616	14,850	26,780	34,039	39,606	32.2	34.1	37.5
Washington	8,314	11,902	14,153	27,951	33,216	39,699	29.7	35.8	35.7
West Virginia	7,105	9,450	12,128	19,815	24,249	29,416	35.9	39.0	41.2
Wisconsin	7,268	9,872	12,400	25,078	29,864	33,857	29.0	33.1	36.6
Wyoming	7,091	8,514	10,556	25,330	35,371	43,929	28.0	24.1	24.0
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

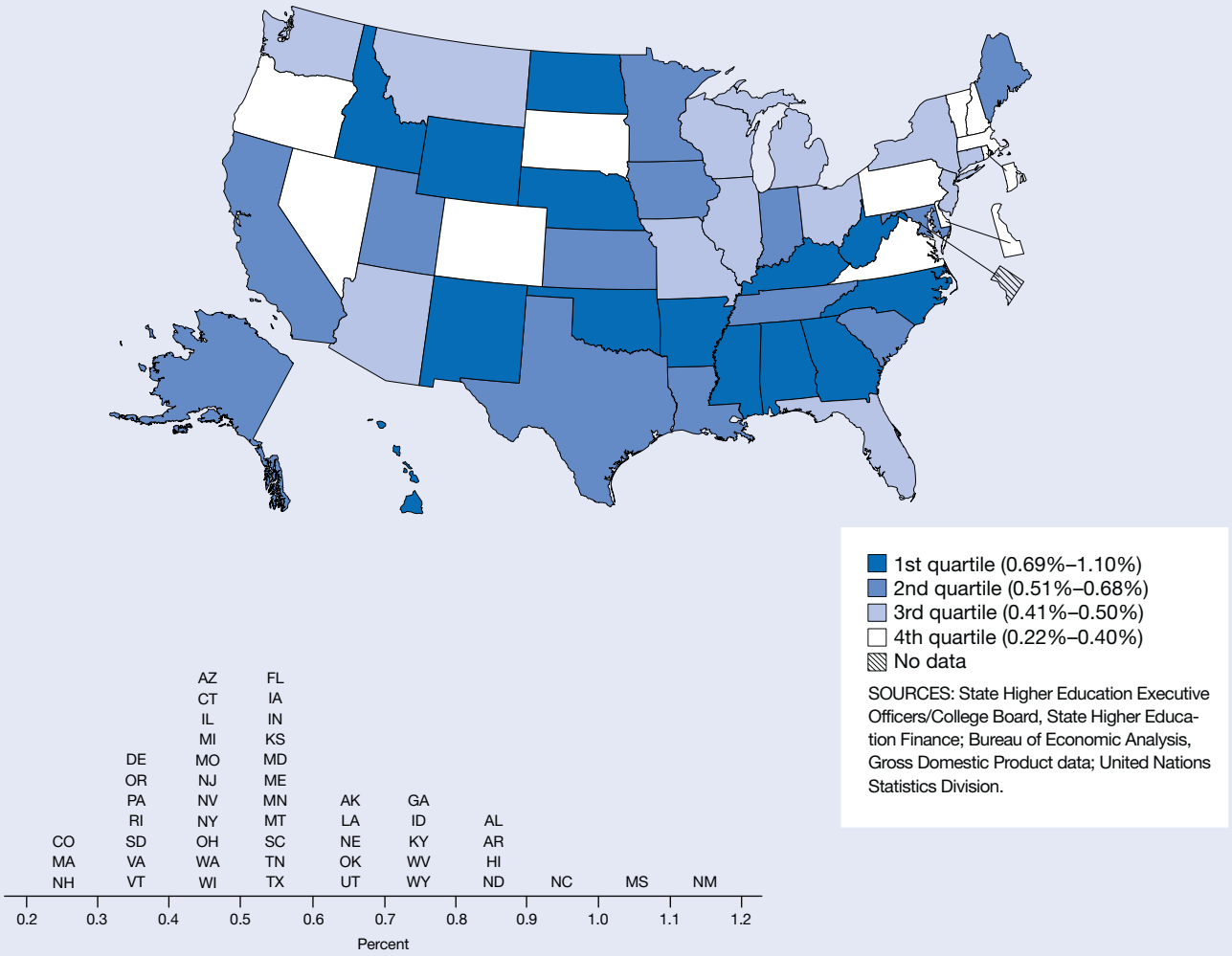
NA = not available

NOTES: National average undergraduate charge for United States from *Digest of Education Statistics* data tables. Average charges for entire academic year (reported in current dollars). Tuition and fees weighted by number of full-time-equivalent undergraduates but not adjusted to reflect student residency. Room and board based on full-time students. National value for disposable personal income is value reported by Bureau of Economic Analysis.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Bureau of Economic Analysis, State and Local Personal Income data.

Appropriations of State Tax Funds for Operating Expenses of Higher Education as a Percentage of Gross Domestic Product

Figure 8-27
Appropriations of state tax funds for operating expenses of higher education as a percentage of gross domestic product: 2010



Findings

- Nationally, state appropriations for operating expenses of higher education as a share of gross domestic product decreased from 0.57% in 2000 to 0.52% in 2010 but has remained unchanged since 2005.
- In 2010, the value of this indicator ranges from 0.22% to 1.10% across the states.
- Between 2000 and 2010, most states increased their appropriations for higher education in terms of current dollars. Notable exceptions were Michigan, Massachusetts, Iowa, Ohio, and Colorado which decreased their appropriations.
- While many states reduced the percentage of their gross domestic product that was allocated to higher education, the states of Georgia and North Carolina made significant increases between 2000 and 2010.

This indicator represents the extent of state spending for higher education operating expenses as a proportion of its gross domestic product. A higher value on this indicator indicates that a state has made financial support of its higher education system more of a priority.

Because of decreases in state tax collections in FY 2009 and FY 2010, state monies allocated to higher education decreased in many states. This decrease was offset to a degree by federal stimulus funds that were used to restore the level of state support for public higher education. The state monies used to calculate this indicator do not include federal stimulus funds for education stabilization or government funds for the modernization, renovation, or repair of higher education facilities.

Table 8-27
Appropriations of state tax funds for operating expenses of higher education as a percentage of gross domestic product, by state: 2000, 2005, and 2010

State	Appropriations of state tax funds for operating expenses of higher education ($millions)			State GDP ($millions)			Appropriations of state tax funds for operating expenses of higher education/state GDP (%)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	56,682	65,140	75,182	9,884,171	12,554,535	14,551,782	0.57	0.52	0.52
Alabama	1,095	1,215	1,449	116,014	151,096	172,567	0.94	0.80	0.84
Alaska	176	235	333	25,913	37,824	49,120	0.68	0.62	0.68
Arizona	866	987	1,104	161,901	222,968	253,609	0.53	0.44	0.44
Arkansas	605	655	905	68,146	88,227	102,566	0.89	0.74	0.88
California	7,684	9,067	10,793	1,317,343	1,691,991	1,901,088	0.58	0.54	0.57
Colorado	719	598	680	171,930	217,412	257,641	0.42	0.28	0.26
Connecticut	699	788	1,032	163,943	197,055	237,261	0.43	0.40	0.43
Delaware	176	203	227	40,957	54,749	62,280	0.43	0.37	0.36
District of Columbia	NA	NA	NA	58,269	82,837	103,288	NA	NA	NA
Florida	2,786	3,581	3,714	481,115	680,277	747,735	0.58	0.53	0.50
Georgia	1,560	2,467	2,977	294,479	363,154	403,070	0.53	0.68	0.74
Hawaii	342	410	575	41,372	56,869	66,760	0.83	0.72	0.86
Idaho	279	351	389	36,091	48,675	55,435	0.77	0.72	0.70
Illinois	2,554	2,686	3,040	474,444	569,544	651,518	0.54	0.47	0.47
Indiana	1,227	1,417	1,564	198,020	239,575	275,676	0.62	0.59	0.57
Iowa	827	743	722	93,287	120,258	142,698	0.89	0.62	0.51
Kansas	622	728	754	85,742	105,164	127,170	0.73	0.69	0.59
Kentucky	924	1,077	1,204	113,108	139,336	163,269	0.82	0.77	0.74
Louisiana	885	1,288	1,411	131,430	197,163	218,853	0.67	0.65	0.64
Maine	213	241	264	36,395	45,587	51,643	0.59	0.53	0.51
Maryland	1,043	1,185	1,669	182,953	248,139	295,304	0.57	0.48	0.57
Massachusetts	1,047	1,131	842	272,680	323,301	378,729	0.38	0.35	0.22
Michigan	2,074	1,948	1,837	336,786	375,260	384,171	0.62	0.52	0.48
Minnesota	1,281	1,273	1,427	188,449	238,367	270,039	0.68	0.53	0.53
Mississippi	917	761	1,006	65,615	81,500	97,461	1.40	0.93	1.03
Missouri	978	925	1,036	180,982	216,633	244,016	0.54	0.43	0.42
Montana	138	153	179	21,629	30,088	36,067	0.64	0.51	0.50
Nebraska	474	520	623	57,233	72,504	89,786	0.83	0.72	0.69
Nevada	306	502	501	75,907	114,771	125,650	0.40	0.44	0.40
New Hampshire	96	115	138	44,067	53,653	60,283	0.22	0.22	0.23
New Jersey	1,520	1,890	2,010	349,334	429,985	487,335	0.43	0.44	0.41
New Mexico	544	762	877	50,262	67,776	79,678	1.08	1.12	1.10
New York	3,127	3,642	4,879	770,621	961,941	1,159,540	0.41	0.38	0.42
North Carolina	2,293	2,781	3,848	281,418	354,973	424,935	0.81	0.78	0.91
North Dakota	187	202	301	18,250	24,672	34,685	1.03	0.82	0.87
Ohio	2,061	2,102	1,968	381,175	444,715	477,699	0.54	0.47	0.41
Oklahoma	739	787	1,018	91,292	120,662	147,543	0.81	0.65	0.69
Oregon	650	586	663	112,974	143,349	174,151	0.58	0.41	0.38
Pennsylvania	1,880	2,016	2,039	395,811	482,324	569,679	0.47	0.42	0.36
Rhode Island	151	188	163	33,522	44,169	49,234	0.45	0.43	0.33
South Carolina	813	977	924	115,392	141,929	164,445	0.70	0.69	0.56
South Dakota	130	163	152	24,009	31,641	39,893	0.54	0.51	0.38
Tennessee	985	1,302	1,474	177,582	224,522	254,806	0.55	0.58	0.58
Texas	4,093	5,110	6,543	732,987	970,997	1,207,494	0.56	0.53	0.54
Utah	547	647	687	69,483	90,748	114,538	0.79	0.71	0.60
Vermont	63	78	91	18,033	22,773	25,620	0.35	0.34	0.36
Virginia	1,480	1,481	1,576	261,894	356,852	423,860	0.57	0.41	0.37
Washington	1,238	1,412	1,576	227,828	279,405	340,460	0.54	0.51	0.46
West Virginia	373	426	503	41,419	51,964	64,642	0.90	0.82	0.78
Wisconsin	1,075	1,122	1,192	177,638	218,923	248,265	0.61	0.51	0.48
Wyoming	140	218	305	17,047	26,238	38,527	0.82	0.83	0.79
Puerto Rico	NA	NA	NA	69,208	86,157	NA	NA	NA	NA

NA = not available

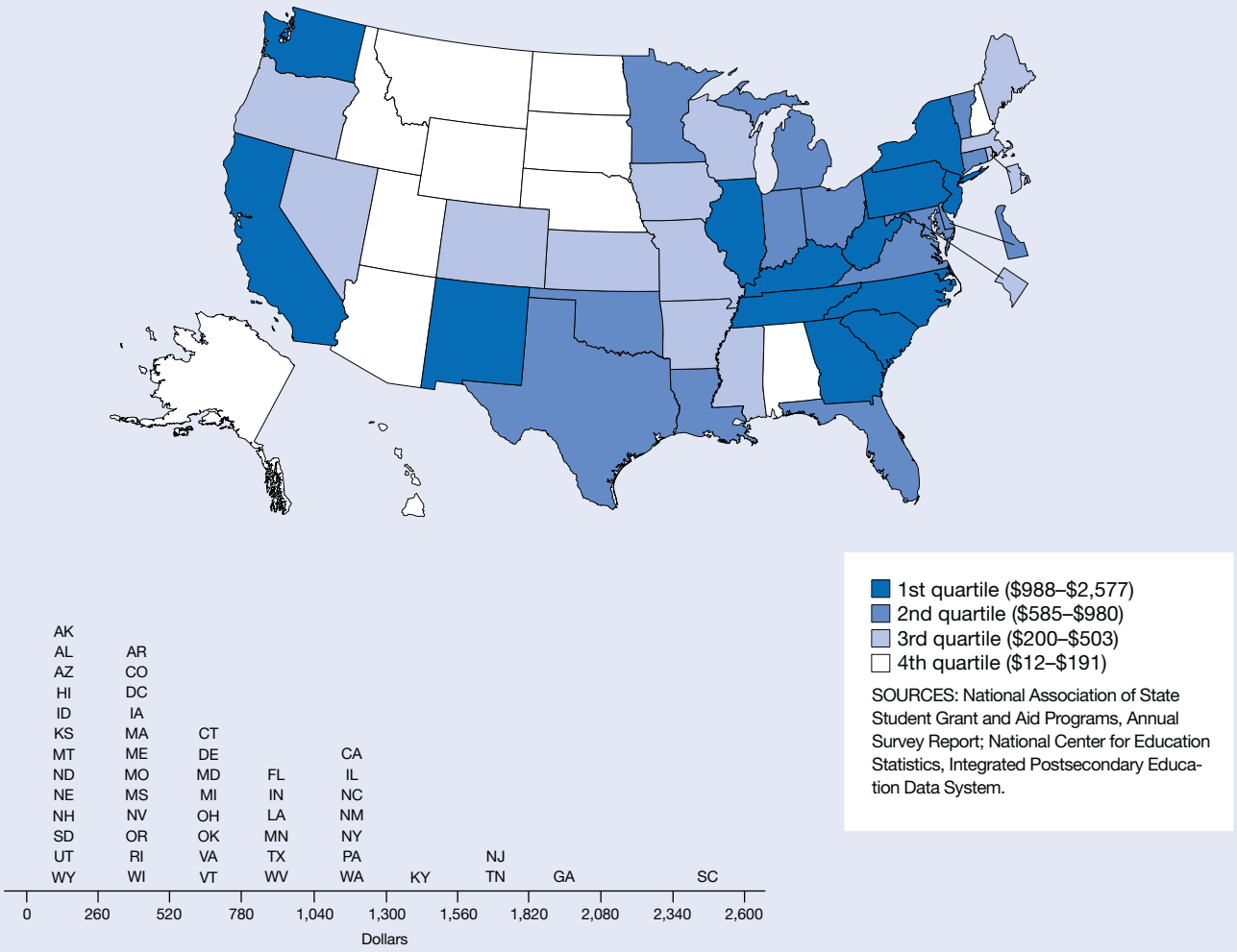
GDP = gross domestic product

NOTE: FY 2010 appropriations figures represent initial allocations or estimates as of 10 February 2010 and are subject to change; appropriations and GDP reported in current dollars.

SOURCES: State Higher Education Executive Officers College Board, State Higher Education Finance (various years); Bureau of Economic Analysis, Gross Domestic Product data; United Nations Statistics Division.

State Expenditures on Student Aid per Full-Time Undergraduate Student

Figure 8-28
State expenditures on student aid per full-time undergraduate student: 2008



Findings

- The total amount of state financial aid from grants provided to undergraduates nearly doubled nationwide increasing from $4.0 billion in 2000 to $7.9 billion in 2008.
- On a per-student basis, state funding for student grants across the United States increased from $553 per undergraduate in 2000 to $839 per undergraduate in 2008 (in current dollars).
- There are major differences in the amount of state aid provided to undergraduate students in different states. State values for this indicator ranged from $12 to $2,577 in 2008. Eight jurisdictions averaged less than $100 per undergraduate student, while 12 provided more than $1,000 per student.
- Eight states reported spending less, in current dollars, per student for student financial aid in 2008 than in 2000, even though the cost of undergraduate education rose rapidly during this period.

The cost of an undergraduate education can be reduced with financial assistance from the state or federal government or from an academic institution. This indicator is calculated by dividing the amount of financial support from state grants by the number of full-time undergraduate students who attend both public and private institutions in the state. A high value is one indicator of state efforts to provide access to higher education at a time of escalating undergraduate costs. The actual distribution of state grants to individual students may be affected by the percentage of undergraduates who are state residents.

This indicator should be viewed relative to the tuition charged to undergraduates in a state, as some states have chosen to subsidize tuition for all students at public institutions rather than provide grants. Other differences between states, such as the amount of scholarship aid available from other sources, the percentage of students attending out-of-state institutions, and their eligibility for state funding, mean that readers should exercise caution when making comparisons between states and examining changes over time.

Total state grant expenditures for financial aid include need-based and non-need-based grants. State assistance through subsidized or unsubsidized loans and awards to students at the graduate and first professional degree levels is not included. The year is the end date of the academic year. For example, data for 2008 represent costs for the 2007–08 academic year.

Table 8-28
State expenditures on student aid per full-time undergraduate student, by state: 2000, 2004, and 2008

State	State expenditures on student aid ($thousands)			Undergraduate enrollment at 4-year institutions			State expenditures on student aid/ undergraduate ($)		
	2000	2004	2008	2000	2004	2008	2000	2004	2008
United States	3,975,263	5,688,877	7,864,532	7,193,814	8,220,306	9,379,112	553	692	839
Alabama	7,487	5,084	19,841	130,189	139,033	183,162	58	37	108
Alaska	NA	NA	670	24,573	27,377	27,132	NA	NA	25
Arizona	2,727	2,865	12,179	111,429	192,819	378,866	24	15	32
Arkansas	30,936	29,705	33,774	70,538	79,007	86,667	439	376	390
California	369,785	654,549	813,374	599,658	679,920	750,965	617	963	1,083
Colorado	54,151	60,266	75,259	133,500	154,427	181,904	406	390	414
Connecticut	37,401	36,771	64,475	85,143	90,774	96,753	439	405	666
Delaware	1,293	12,703	16,980	25,761	27,996	28,438	50	454	597
District of Columbia	743	27,571	33,496	40,703	59,930	76,586	18	460	437
Florida	225,553	326,468	533,073	288,143	457,808	587,097	783	713	908
Georgia	240,458	431,951	497,667	188,383	234,213	266,808	1,276	1,844	1,865
Hawaii	490	408	408	26,290	30,956	34,471	19	13	12
Idaho	1,127	4,982	6,221	39,343	55,877	59,010	29	89	105
Illinois	360,177	347,565	415,298	276,559	298,037	343,104	1,302	1,166	1,210
Indiana	106,169	161,263	223,676	217,294	230,454	259,489	489	700	862
Iowa	51,823	49,285	59,573	97,241	110,724	166,514	533	445	358
Kansas	12,397	14,073	19,090	84,620	91,803	95,529	147	153	200
Kentucky	48,444	143,338	186,988	109,981	121,518	130,274	440	1,180	1,435
Louisiana	68,391	111,602	137,347	146,259	157,201	140,163	468	710	980
Maine	10,360	12,561	17,916	42,093	44,104	43,462	246	285	412
Maryland	45,683	50,390	99,726	117,720	130,334	140,784	388	387	708
Massachusetts	103,301	79,735	86,342	235,263	238,366	256,937	439	335	336
Michigan	91,109	162,225	189,078	287,233	314,782	323,385	317	515	585
Minnesota	113,750	119,641	156,433	142,734	164,791	183,329	797	726	853
Mississippi	20,163	21,367	22,923	61,043	65,345	67,127	330	327	341
Missouri	39,504	41,233	109,998	180,799	203,040	218,700	218	203	503
Montana	2,953	2,542	4,367	32,393	33,615	33,391	91	76	131
Nebraska	5,645	8,742	12,537	58,789	62,427	65,693	96	140	191
Nevada	6,083	34,535	39,109	32,012	76,669	92,307	190	450	424
New Hampshire	1,506	3,651	3,732	40,367	43,821	45,831	37	83	81
New Jersey	189,294	225,282	292,500	156,867	167,863	183,112	1,207	1,342	1,597
New Mexico	33,872	29,821	67,781	43,089	50,348	52,659	786	592	1,287
New York	611,167	875,299	824,174	569,260	609,027	678,593	1,074	1,437	1,215
North Carolina	109,004	156,604	286,773	191,117	215,536	243,631	570	727	1,177
North Dakota	2,431	1,756	3,778	28,462	34,010	38,778	85	52	97
Ohio	163,994	200,787	254,785	302,681	326,174	353,284	542	616	721
Oklahoma	26,595	28,841	75,823	98,512	114,090	117,799	270	253	644
Oregon	17,891	21,782	35,036	76,071	89,212	96,641	235	244	363
Pennsylvania	280,402	360,816	460,451	377,646	409,046	438,118	742	882	1,051
Rhode Island	61,722	12,296	15,336	49,484	52,831	55,312	1,247	233	277
South Carolina	33,198	225,297	295,627	92,074	103,533	114,705	361	2,176	2,577
South Dakota	857	NA	2,416	32,310	37,315	38,420	27	NA	63
Tennessee	21,383	42,395	279,300	139,743	154,060	171,186	153	275	1,632
Texas	93,814	156,529	484,807	432,747	495,259	554,233	217	316	875
Utah	2,735	4,081	10,705	120,151	138,646	151,316	23	29	71
Vermont	48,840	17,149	18,804	25,972	27,166	30,393	1,880	631	619
Virginia	70,717	110,621	173,813	180,573	202,472	239,213	392	546	727
Washington	76,581	134,280	205,891	105,470	122,495	159,407	726	1,096	1,292
West Virginia	18,982	52,087	82,487	68,435	67,215	83,509	277	775	988
Wisconsin	52,020	75,920	102,533	168,547	177,251	205,226	309	428	500
Wyoming	155	163	162	8,550	9,589	9,699	18	17	17
Puerto Rico	34,004	30,999	31,891	149,699	165,293	173,409	227	188	184

NA = not available

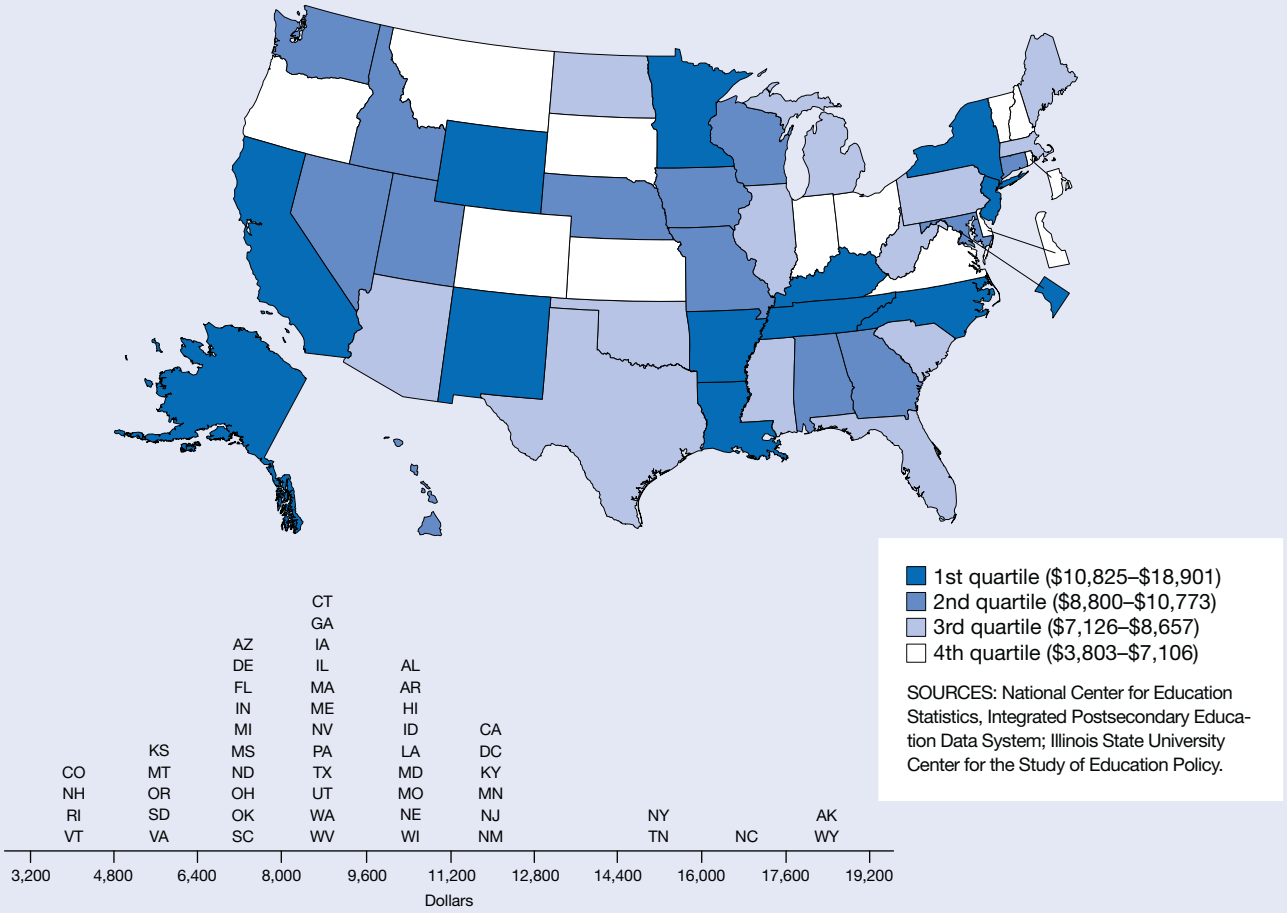
NOTE: State expenditures on student aid reported in current dollars.

SOURCES: National Association of State Student Grant and Aid Programs, Annual Survey Report (various years); National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Science and Engineering Indicators 2012

State Funding for Major Public Research Universities per Enrolled Student

Figure 8-29
State funding for major public research universities per enrolled student: 2010



Findings

- From 2002 to 2010, state funds for operating expenses of all public institutions of higher education increased by 21%. For major public research universities, state funds increased by only 8% dropping the states' share of their total operating funds from 28% to 19%.
- When adjusted for inflation, total state expenditures for public higher education were essentially flat over the decade, while the amount going to major public research universities decreased by 10%.
- Between 2002 and 2008, total enrollment at major public research universities increased by 8% and undergraduate enrollment at all public 4-year institutions increased by 22%.
- Over the decade, per-student state support to major research universities dropped by an average of 20% in inflation-adjusted dollars. In 10 states, the decline ranged from 30% to 48%. New York and Wyoming increased their funds per enrollment by over half. Their funds per student in 2010 put them among the top 5 states on this measure.

Public research universities rely on state support for a substantial share of their operating revenues, most of which support their education function. An indicator of states' investment in the education of their students is the amount of funding provided per enrolled student. Eventually, changes in these funds affect the institutions' financial health and the quality of education they provide.

Data for this indicator cover 102 public research universities with broad educational missions (excluding free-standing medical and engineering schools when possible). These institutions are either the leading recipient of academic R&D funding in their state or among the nation's top 100 recipients of academic R&D funding to public universities. State funds include state operating grants and contracts as well as state appropriations. Enrollment includes total enrollment measured in the fall of each academic year. Total state funds are shown in current dollars; the Findings also address constant dollar results.

Data were drawn from annual surveys of the National Center for Education Statistics (NCES), and supplemented with data from Illinois State University's Center for the Study of Education Policy when NCES data were unavailable or incomplete.

State funds are one of many sources of public university revenue. This indicator does not include changes in these other sources of revenue.

Table 8-29
State funding for major public research universities per enrolled student, by state: 2002, 2006, and 2010

State	State funding for major public research universities ($ thousands)			Enrolled students			State funding for major public research universities/ enrolled student ($)		
	2002	2006	2010	2002	2006	2010	2002	2006	2010
United States	23,826,069	24,969,781	25,835,178	2,527,368	2,663,015	2,844,570	9,427	9,377	9,082
Alabama	440,152	537,351	529,456	43,918	46,989	49,157	10,022	11,436	10,771
Alaska	97,177	125,062	164,911	7,142	8,228	9,137	13,606	15,200	18,049
Arizona	618,184	705,582	761,297	81,440	88,648	106,831	7,591	7,959	7,126
Arkansas	166,884	184,955	214,863	15,752	17,821	19,849	10,594	10,378	10,825
California	3,317,385	2,887,676	3,161,359	222,500	232,159	253,013	14,910	12,438	12,495
Colorado	355,986	262,707	235,480	58,166	59,369	61,912	6,120	4,425	3,803
Connecticut	188,379	205,800	239,156	19,876	23,185	25,029	9,478	8,876	9,555
Delaware	120,736	139,441	148,308	20,949	20,982	21,138	5,763	6,646	7,016
District of Columbia	46,068	61,266	62,070	5,456	5,363	4,960	8,444	11,424	12,514
Florida	1,457,282	1,808,109	1,704,160	186,295	213,259	223,509	7,822	8,478	7,625
Georgia	908,772	912,554	804,648	73,635	76,762	85,603	12,342	11,888	9,400
Hawaii	198,539	231,273	220,156	17,532	20,644	20,435	11,324	11,203	10,773
Idaho	130,026	138,166	118,466	12,067	12,476	11,957	10,775	11,075	9,908
Illinois	954,329	753,066	766,844	85,844	88,191	91,071	11,117	8,539	8,420
Indiana	532,994	532,791	563,341	77,845	78,109	83,399	6,847	6,821	6,755
Iowa	590,225	565,168	541,689	56,591	54,167	56,932	10,430	10,434	9,515
Kansas	313,888	320,226	317,732	48,178	50,116	52,823	6,515	6,390	6,015
Kentucky	514,549	602,485	559,642	43,583	46,398	47,311	11,806	12,985	11,829
Louisiana	288,601	330,639	320,314	32,059	34,128	28,643	9,002	9,688	11,183
Maine	96,188	101,515	102,969	10,698	11,435	11,894	8,991	8,878	8,657
Maryland	529,049	466,392	507,435	45,397	47,019	50,065	11,654	9,919	10,136
Massachusetts	227,241	263,877	218,861	24,678	25,093	27,016	9,208	10,516	8,101
Michigan	1,040,859	937,704	923,999	113,515	117,319	120,531	9,169	7,993	7,666
Minnesota	611,601	606,249	621,463	46,597	51,175	51,659	13,125	11,847	12,030
Mississippi	224,924	233,863	257,505	29,504	31,002	34,533	7,624	7,543	7,457
Missouri	223,274	252,801	306,294	23,667	27,930	31,237	9,434	9,051	9,805
Montana	62,345	62,875	63,841	11,670	12,143	12,348	5,342	5,178	5,170
Nebraska	217,607	222,523	250,498	22,764	21,675	24,100	9,559	10,266	10,394
Nevada	146,094	198,620	148,492	14,316	16,336	16,875	10,205	12,158	8,800
New Hampshire	65,447	66,162	73,144	14,766	14,511	15,253	4,432	4,559	4,795
New Jersey	646,252	682,817	572,428	44,512	42,507	46,206	14,519	16,064	12,389
New Mexico	383,411	459,827	534,212	38,977	42,244	45,767	9,837	10,885	11,672
New York	556,999	1,161,303	1,295,820	76,717	80,289	86,291	7,260	14,464	15,017
North Carolina	760,128	915,647	1,050,584	54,780	57,424	62,735	13,876	15,945	16,746
North Dakota	132,543	153,291	204,312	22,298	25,053	27,361	5,944	6,119	7,467
Ohio	702,689	731,819	776,038	96,079	97,637	109,212	7,314	7,495	7,106
Oklahoma	368,093	362,186	386,065	47,112	50,198	48,914	7,813	7,215	7,893
Oregon	217,853	218,217	213,453	36,969	39,571	44,285	5,893	5,515	4,820
Pennsylvania	774,683	827,682	946,362	97,410	100,963	110,020	7,953	8,198	8,602
Rhode Island	91,296	91,073	67,353	14,264	15,095	16,389	6,400	6,033	4,110
South Carolina	391,965	378,784	347,733	40,101	44,230	47,593	9,774	8,564	7,306
South Dakota	52,069	60,701	67,324	9,260	10,938	12,376	5,623	5,550	5,440
Tennessee	400,660	433,396	458,400	26,033	28,512	29,934	15,390	15,200	15,314
Texas	1,067,096	1,118,929	1,227,595	140,695	144,430	152,480	7,584	7,747	8,051
Utah	391,336	416,127	396,268	50,669	45,016	44,896	7,723	9,244	8,826
Vermont	43,369	50,131	51,893	10,078	11,597	13,391	4,303	4,323	3,875
Virginia	841,601	831,820	796,312	120,467	131,914	143,477	6,986	6,306	5,550
Washington	591,118	602,357	635,081	58,485	62,795	72,044	10,107	9,592	8,815
West Virginia	218,982	206,953	232,538	22,774	26,051	28,898	9,615	7,944	8,047
Wisconsin	388,883	382,379	432,132	40,922	40,793	41,654	9,503	9,374	10,374
Wyoming	120,257	167,445	234,883	12,366	13,126	12,427	9,725	12,757	18,901
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

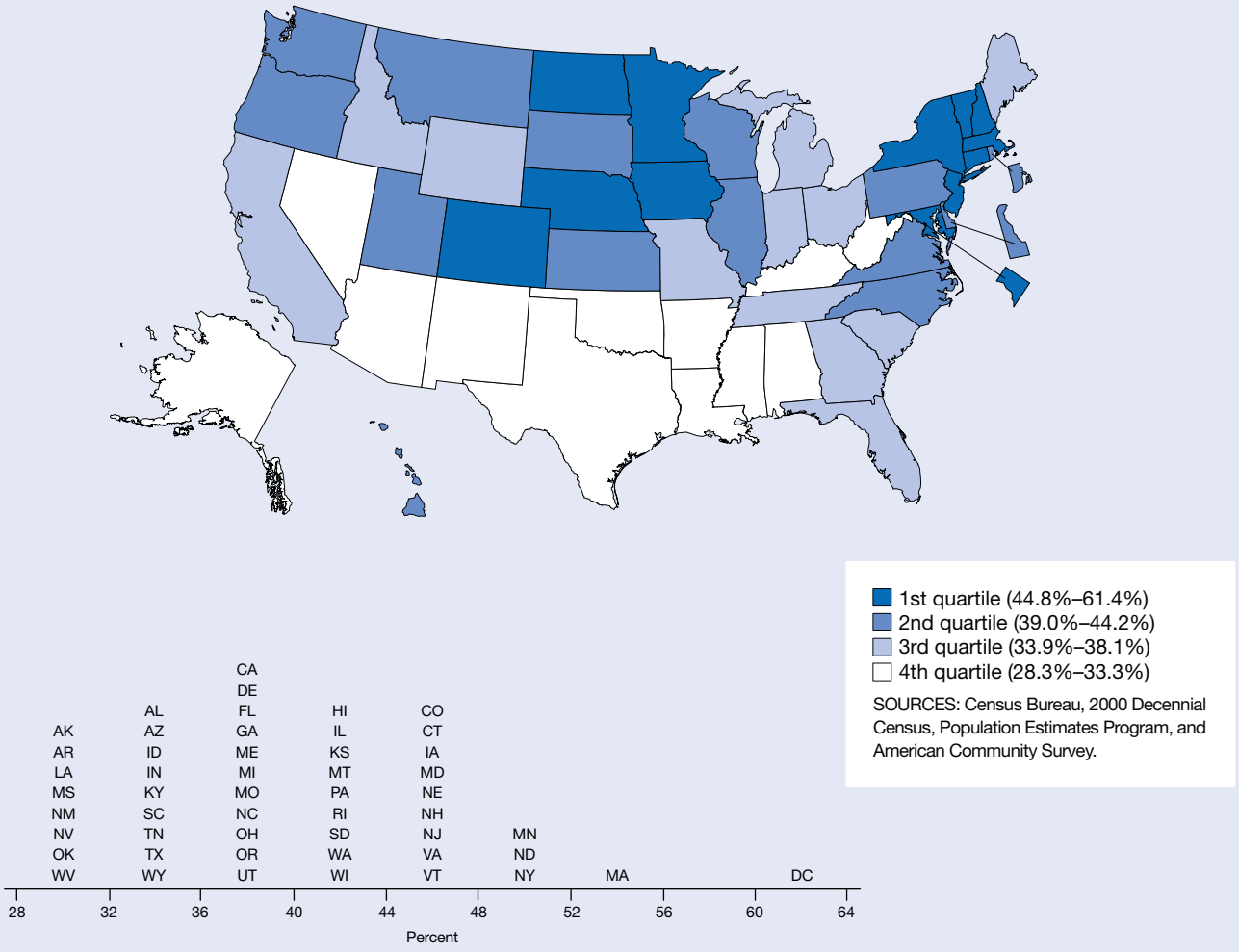
NA = not available

NOTES: National average state funds per enrolled student from Integrated Postsecondary Education Data System. For District of Columbia, funds are local education taxes. For Colorado, Connecticut, Kansas, New Jersey, and Tennessee, data for certain years include data from the Center for the Study of Education Policy's Grapevine tables. For Colorado, Connecticut, and Kansas, 2010 state funds are projected based on 2009. All other 2010 funds are preliminary.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Illinois State University Center for the Study of Education Policy.

Postsecondary Degree Holders Among Individuals 25–44 Years Old

Figure 8-30
Postsecondary degree holders among individuals 25–44 years old: 2009



Findings

- The early- to mid-career population with a post-secondary degree was 39.2% nationwide in 2009, an increase from 34.7% in 2000.
- In 2009, the percentage of this cohort with a postsecondary degree varied greatly among states, ranging from 28.3% to 52.6%.
- Between 2000 and 2009, all states showed an increase in the percentage of their early- to mid-career population with a postsecondary degree, ranging from nearly 1% to almost 10% over the time period.
- States with the lowest cost of living tended to rank lowest on this indicator.

This indicator represents the percentage of the early- to mid-career population that has earned a postsecondary degree. That degree may be an associate's, bachelor's, master's, or doctoral degree. The indicator represents where postsecondary degree holders live rather than where they were educated. The age cohort of 25–44 years represents the group most likely to have completed a post-secondary program.

Estimates of educational attainment and of the population of individuals 25-44 years old are provided by the U.S. Census Bureau. Small differences in the value of this indicator between states and across time generally are not meaningful.

Table 8-30
Postsecondary degree holders among individuals 25–44 years old, by state: 2000, 2005, and 2009

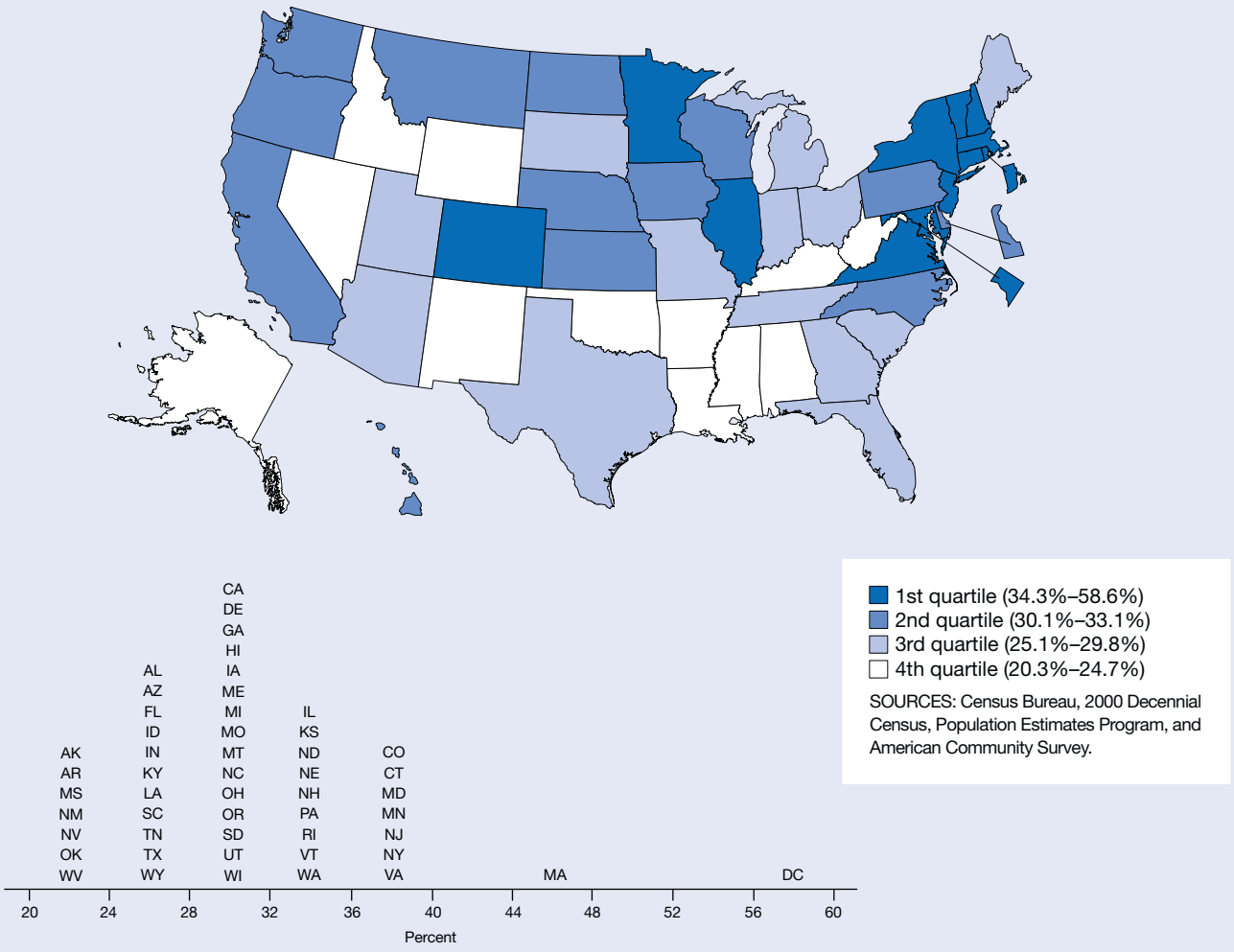
State	Postsecondary degree holders 25–44 years old			Individuals 25–44 years old			Postsecondary degree holders/ individuals 25–44 years old (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	29,471,612	31,382,831	32,606,255	85,040,251	83,257,116	83,096,278	34.7	37.7	39.2
Alabama	370,196	389,490	405,826	1,288,527	1,231,043	1,235,509	28.7	31.6	32.8
Alaska	61,646	58,631	61,366	203,522	191,837	197,248	30.3	30.6	31.1
Arizona	472,901	552,805	608,775	1,511,469	1,695,189	1,826,751	31.3	32.6	33.3
Arkansas	177,657	202,622	216,126	750,972	747,630	755,915	23.7	27.1	28.6
California	3,670,622	3,892,099	4,024,498	10,714,403	10,668,824	10,604,180	34.3	36.5	38.0
Colorado	596,036	636,437	654,274	1,400,850	1,388,046	1,445,400	42.5	45.9	45.3
Connecticut	443,608	432,451	426,214	1,032,689	951,020	899,649	43.0	45.5	47.4
Delaware	84,170	87,994	92,531	236,441	234,823	232,837	35.6	37.5	39.7
District of Columbia	90,097	103,236	121,521	189,439	190,118	197,983	47.6	54.3	61.4
Florida	1,513,345	1,694,517	1,761,941	4,569,347	4,787,948	4,789,059	33.1	35.4	36.8
Georgia	884,108	1,013,471	1,039,426	2,652,764	2,746,294	2,830,740	33.3	36.9	36.7
Hawaii	136,758	129,858	157,298	362,336	354,560	360,037	37.7	36.6	43.7
Idaho	112,690	121,718	135,622	362,401	375,247	400,329	31.1	32.4	33.9
Illinois	1,444,942	1,530,725	1,553,736	3,795,544	3,611,958	3,544,995	38.1	42.4	43.8
Indiana	537,644	562,483	603,097	1,791,828	1,716,726	1,689,050	30.0	32.8	35.7
Iowa	289,740	317,772	331,841	808,259	746,659	734,622	35.8	42.6	45.2
Kansas	282,475	289,848	297,294	769,204	713,752	717,645	36.7	40.6	41.4
Kentucky	317,109	353,170	385,497	1,210,773	1,172,770	1,162,402	26.2	30.1	33.2
Louisiana	316,348	340,337	358,275	1,293,128	1,217,593	1,186,325	24.5	28.0	30.2
Maine	122,958	123,129	122,981	370,597	344,295	322,409	33.2	35.8	38.1
Maryland	672,460	693,317	713,321	1,664,677	1,611,882	1,557,085	40.4	43.0	45.8
Massachusetts	942,748	932,197	939,443	1,989,783	1,857,726	1,787,350	47.4	50.2	52.6
Michigan	982,169	1,013,031	946,696	2,960,544	2,743,365	2,536,880	33.2	36.9	37.3
Minnesota	631,677	684,727	688,731	1,497,320	1,420,387	1,394,305	42.2	48.2	49.4
Mississippi	208,866	231,759	226,353	807,170	771,676	761,785	25.9	30.0	29.7
Missouri	517,750	543,130	582,137	1,626,302	1,566,374	1,554,391	31.8	34.7	37.5
Montana	81,428	85,590	94,468	245,220	226,076	231,769	33.2	37.9	40.8
Nebraska	185,090	202,182	202,445	487,107	453,659	451,666	38.0	44.6	44.8
Nevada	152,536	193,902	226,510	628,572	719,501	769,608	24.3	26.9	29.4
New Hampshire	156,434	161,161	153,958	381,240	357,080	333,694	41.0	45.1	46.1
New Jersey	1,076,450	1,114,215	1,101,798	2,624,146	2,485,721	2,363,679	41.0	44.8	46.6
New Mexico	149,398	153,406	164,083	516,100	510,063	523,059	28.9	30.1	31.4
New York	2,359,507	2,499,314	2,566,265	5,831,622	5,548,409	5,351,598	40.5	45.0	48.0
North Carolina	844,019	933,034	1,004,796	2,500,535	2,485,963	2,553,673	33.8	37.5	39.3
North Dakota	71,509	73,974	77,223	174,891	151,681	153,582	40.9	48.8	50.3
Ohio	1,075,353	1,098,912	1,115,603	3,325,210	3,122,259	2,998,151	32.3	35.2	37.2
Oklahoma	276,525	296,769	298,455	975,169	929,451	957,235	28.4	31.9	31.2
Oregon	333,963	361,760	401,129	997,269	988,164	1,028,645	33.5	36.6	39.0
Pennsylvania	1,230,548	1,269,457	1,326,259	3,508,562	3,280,173	3,187,617	35.1	38.7	41.6
Rhode Island	117,758	127,598	120,458	310,636	296,463	274,622	37.9	43.0	43.9
South Carolina	357,570	389,378	425,929	1,185,955	1,172,501	1,200,366	30.2	33.2	35.5
South Dakota	73,128	82,619	80,521	206,399	194,122	196,143	35.4	42.6	41.1
Tennessee	489,940	521,417	579,010	1,718,428	1,698,113	1,710,134	28.5	30.7	33.9
Texas	1,973,279	2,112,582	2,312,816	6,484,321	6,665,252	7,064,651	30.4	31.7	32.7
Utah	222,534	276,707	302,339	626,600	686,668	775,481	35.5	40.3	39.0
Vermont	70,277	68,447	68,179	176,456	158,184	148,584	39.8	43.3	45.9
Virginia	874,239	925,208	970,871	2,237,655	2,194,670	2,194,699	39.1	42.2	44.2
Washington	693,591	739,976	782,873	1,816,217	1,783,093	1,855,094	38.2	41.5	42.2
West Virginia	115,337	125,231	130,226	501,343	468,846	459,606	23.0	26.7	28.3
Wisconsin	566,244	596,923	595,646	1,581,690	1,495,775	1,449,006	35.8	39.9	41.1
Wyoming	44,235	42,115	49,575	138,619	127,487	139,035	31.9	33.0	35.7
Puerto Rico	358,595	424,718	412,249	1,049,995	1,076,844	1,084,239	34.2	39.4	38.0

SOURCES: Census Bureau, 2000 Decennial Census, Population Estimates Program (various years), and American Community Survey (various years).

Science and Engineering Indicators 2012

Bachelor's Degree Holders Among Individuals 25–44 Years Old

Figure 8-31
Bachelor's degree holders among individuals 25–44 years old: 2009



Findings

- The early- to mid-career population with at least a bachelor's degree was 30.9% nationwide in 2009, an increase from 26.8% in 2000.
- All states showed an increase in the percentage of their early-career population with at least a bachelor's degree between 2000 and 2009.
- In 2009, the percentage of the early-career population with at least a bachelor's degree varied among states, ranging from 20.3 % to 45.1%. The highest percentages tended to be found in the New England and Middle Atlantic states.
- States with the lowest cost of living tended to rank lowest on this indicator.
- The difference between EPSCoR and non-EPSCoR states, as a group, remained relatively unchanged and may have increased slightly over the decade.

This indicator represents the percentage of the early- to mid-career population that has earned at least a 4-year undergraduate degree. The indicator represents where college degree holders live rather than where they were educated. The age cohort of 25–44 years represents a group of individuals who are potential long-term participants in a state's workforce.

Estimates of educational attainment are developed by the U.S. Census Bureau. Small differences in the value of this indicator between states and across time generally are not meaningful.

Table 8-31
Bachelor's degree holders among individuals 25–44 years old, by state: 2000, 2005, and 2009

State	Bachelor's degree holders 25–44 years old			Individuals 25–44 years old			Bachelor's degree holders/individuals 25–44 years old (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
EPSCoR states	3,004,954	3,199,506	3,399,367	13,582,778	13,120,340	13,171,410	22.1	24.4	25.8
Non-EPSCoR states	19,692,206	21,057,298	22,147,292	71,268,034	69,946,658	69,726,885	27.6	30.1	31.8
Average EPSCoR state value	na	na	na	na	na	na	23.4	26.0	27.4
Average non-EPSCoR state value	na	na	na	na	na	na	28.0	30.7	32.4
United States	22,781,996	24,353,620	25,662,617	85,040,251	83,257,116	83,096,278	26.8	29.3	30.9
Alabama	275,759	288,817	303,640	1,288,527	1,231,043	1,235,509	21.4	23.5	24.6
Alaska	45,560	45,315	45,858	203,522	191,837	197,248	22.4	23.6	23.2
Arizona	355,836	408,522	458,075	1,511,469	1,695,189	1,826,751	23.5	24.1	25.1
Arkansas	136,883	152,225	161,439	750,972	747,630	755,915	18.2	20.4	21.4
California	2,882,717	3,112,603	3,270,704	10,714,403	10,668,824	10,604,180	26.9	29.2	30.8
Colorado	480,984	512,178	537,204	1,400,850	1,388,046	1,445,400	34.3	36.9	37.2
Connecticut	362,272	362,929	354,994	1,032,689	951,020	899,649	35.1	38.2	39.5
Delaware	65,811	71,090	73,657	236,441	234,823	232,837	27.8	30.3	31.6
District of Columbia	84,836	96,816	115,958	189,439	190,118	197,983	44.8	50.9	58.6
Florida	1,081,551	1,212,200	1,270,000	4,569,347	4,787,948	4,789,059	23.7	25.3	26.5
Georgia	718,591	820,695	844,470	2,652,764	2,746,294	2,830,740	27.1	29.9	29.8
Hawaii	99,378	95,029	111,896	362,336	354,560	360,037	27.4	26.8	31.1
Idaho	80,235	89,959	98,196	362,401	375,247	400,329	22.1	24.0	24.5
Illinois	1,149,688	1,216,933	1,264,186	3,795,544	3,611,958	3,544,995	30.3	33.7	35.7
Indiana	397,050	408,107	440,159	1,791,828	1,716,726	1,689,050	22.2	23.8	26.1
Iowa	202,004	221,497	228,596	808,259	746,659	734,622	25.0	29.7	31.1
Kansas	223,467	224,946	234,605	769,204	713,752	717,645	29.1	31.5	32.7
Kentucky	234,921	256,209	287,622	1,210,773	1,172,770	1,162,402	19.4	21.8	24.7
Louisiana	256,363	267,429	285,090	1,293,128	1,217,593	1,186,325	19.8	22.0	24.0
Maine	86,989	85,987	91,692	370,597	344,295	322,409	23.5	25.0	28.4
Maryland	566,294	582,280	613,136	1,664,677	1,611,882	1,557,085	34.0	36.1	39.4
Massachusetts	773,569	780,522	805,478	1,989,783	1,857,726	1,787,350	38.9	42.0	45.1
Michigan	719,607	757,970	714,045	2,960,544	2,743,365	2,536,880	24.3	27.6	28.1
Minnesota	476,707	511,402	520,361	1,497,320	1,420,387	1,394,305	31.8	36.0	37.3
Mississippi	144,488	152,606	161,959	807,170	771,676	761,785	17.9	19.8	21.3
Missouri	407,449	429,501	456,593	1,626,302	1,566,374	1,554,391	25.1	27.4	29.4
Montana	62,682	63,693	71,370	245,220	226,076	231,769	25.6	28.2	30.8
Nebraska	134,516	149,233	148,518	487,107	453,659	451,666	27.6	32.9	32.9
Nevada	111,517	143,301	167,403	628,572	719,501	769,608	17.7	19.9	21.8
New Hampshire	114,745	122,682	118,843	381,240	357,080	333,694	30.1	34.4	35.6
New Jersey	899,016	943,939	935,352	2,624,146	2,485,721	2,363,679	34.3	38.0	39.6
New Mexico	110,360	110,562	117,143	516,100	510,063	523,059	21.4	21.7	22.4
New York	1,817,661	1,964,870	2,072,041	5,831,622	5,548,409	5,351,598	31.2	35.4	38.7
North Carolina	636,799	697,740	768,610	2,500,535	2,485,963	2,553,673	25.5	28.1	30.1
North Dakota	46,291	48,381	50,787	174,891	151,681	153,582	26.5	31.9	33.1
Ohio	806,803	833,138	852,179	3,325,210	3,122,259	2,998,151	24.3	26.7	28.4
Oklahoma	209,025	218,272	224,298	975,169	929,451	957,235	21.4	23.5	23.4
Oregon	257,875	284,778	315,664	997,269	988,164	1,028,645	25.9	28.8	30.7
Pennsylvania	938,930	979,367	1,035,976	3,508,562	3,280,173	3,187,617	26.8	29.9	32.5
Rhode Island	88,647	98,477	94,159	310,636	296,463	274,622	28.5	33.2	34.3
South Carolina	259,773	283,280	315,848	1,185,955	1,172,501	1,200,366	21.9	24.2	26.3
South Dakota	51,213	56,951	55,005	206,399	194,122	196,143	24.8	29.3	28.0
Tennessee	380,929	401,027	458,483	1,718,428	1,698,113	1,710,134	22.2	23.6	26.8
Texas	1,571,951	1,668,865	1,848,862	6,484,321	6,665,252	7,064,651	24.2	25.0	26.2
Utah	162,495	197,780	225,717	626,600	686,668	775,481	25.9	28.8	29.1
Vermont	52,787	53,693	52,956	176,456	158,184	148,584	29.9	33.9	35.6
Virginia	722,081	763,865	815,770	2,237,655	2,194,670	2,194,699	32.3	34.8	37.2
Washington	520,382	554,104	602,269	1,816,217	1,783,093	1,855,094	28.7	31.1	32.5
West Virginia	83,441	91,539	93,104	501,343	468,846	459,606	16.6	19.5	20.3
Wisconsin	402,965	430,486	438,368	1,581,690	1,495,775	1,449,006	25.5	28.8	30.3
Wyoming	30,103	29,830	34,279	138,619	127,487	139,035	21.7	23.4	24.7
Puerto Rico	245,975	276,934	286,174	1,049,995	1,076,844	1,084,239	23.4	25.7	26.4

na = not applicable

EPSCoR = Experimental Program to Stimulate Competitive Research

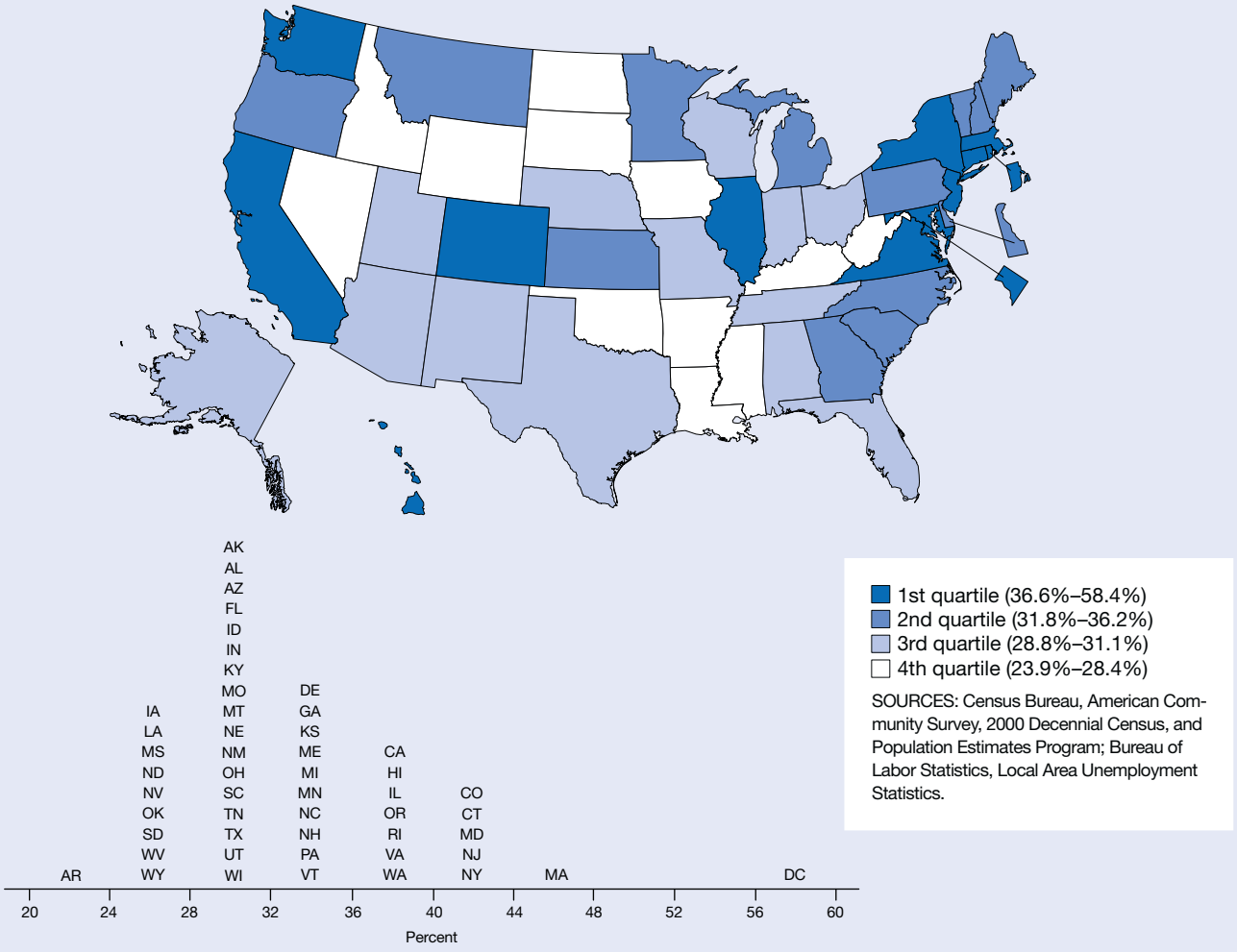
NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: Census Bureau, American Community Survey (various years), 2000 Decennial Census, and Population Estimates Program (various years).

Science and Engineering Indicators 2012

Bachelor's Degree Holders Potentially in the Workforce

Figure 8-32
Bachelor's degree holders potentially in the workforce: 2009



SOURCES: Census Bureau, American Community Survey, 2000 Decennial Census, and Population Estimates Program; Bureau of Labor Statistics, Local Area Unemployment Statistics.

Findings

- In 2009, 48 million individuals between ages 25 and 64 held bachelor's degrees in the United States, up from 39 million in 2000. Nationwide, the ratio of bachelor's degree holders to the size of the workforce rose from 28.5% in 2000 to 34.6% in 2009. This ratio varied considerably among the states, ranging from 23.9% to 47.1% in 2009.
- The value of this indicator increased in all jurisdictions between 2000 and 2009. This increase may reflect a replacement of older cohorts of workers with younger, more educated ones. It may also indicate the restructuring of state economies to emphasize work that requires a higher level of education or credentials.
- In 2009, the jurisdictions in which the highest concentrations of bachelor's degree holders lived included the District of Columbia, Massachusetts, New Jersey, and Maryland.

The ratio of degree holders (bachelor's, graduate, or professional) to the population potentially available for work is an indicator of the concentration of individuals with higher education qualifications in a jurisdiction. This indicator does not imply that all degree holders are currently employed; rather, it indicates the educational level of the workforce if all degree holders were employed. Knowledge-intensive businesses seeking to relocate may be attracted to states with high values on this indicator. Workers with at least a bachelor's degree have a clear advantage over less-educated workers in expected lifetime earnings.

Estimates of degree data are provided by the U.S. Census Bureau and are limited to individuals 25–64 years old, the age range most representative of a jurisdiction's workforce. Individuals younger than age 25 are considered to be in the process of completing their education. Individuals older than 64 are considered to be largely retired, so their educational attainment would have limited applicability to the quality of the workforce. Employed workforce data are Bureau of Labor Statistics estimates of employed civilians based on Local Area Unemployment Statistics. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-32
Bachelor's degree holders potentially in the workforce, by state: 2000, 2005, and 2009

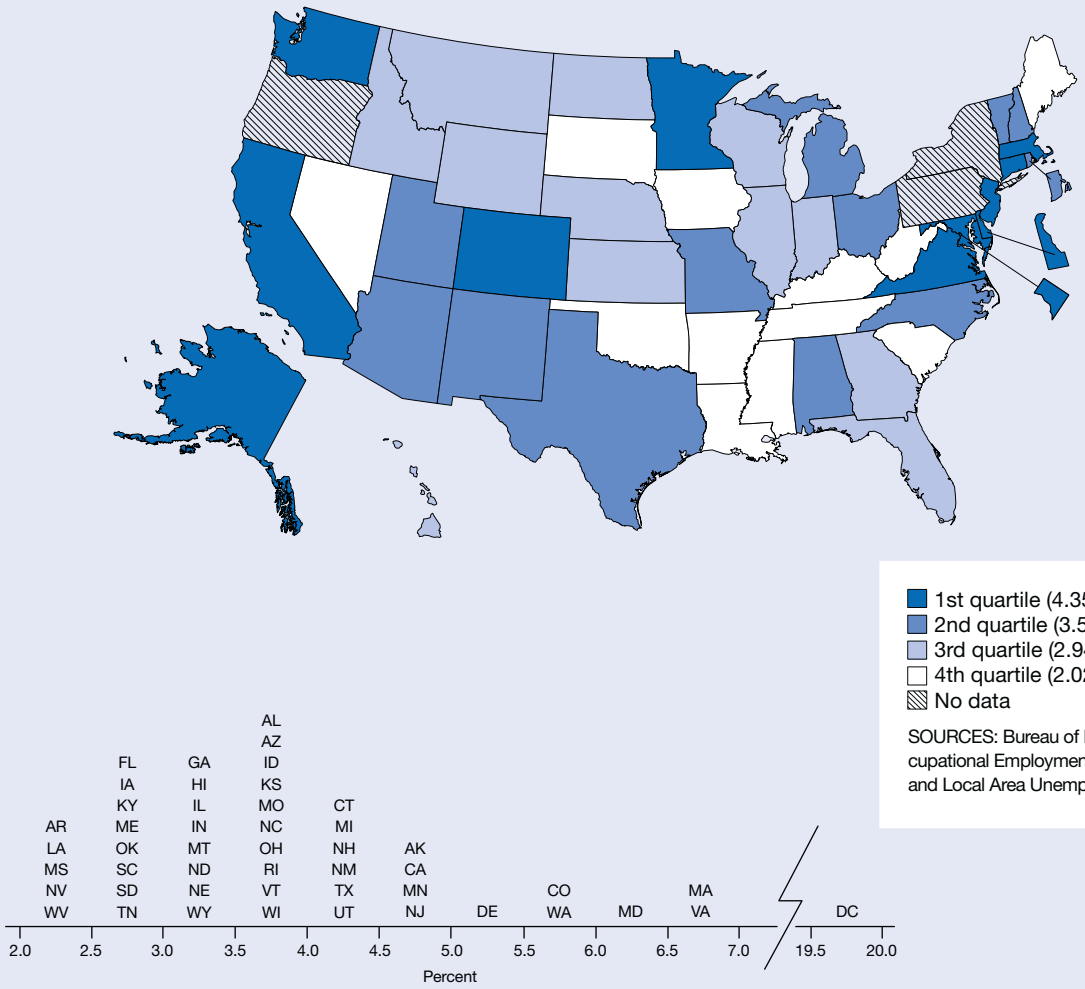
State	Bachelor's degree holders 25–64 years old			Employed workforce			Bachelor's degree holders/workforce (%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
United States	39,078,598	44,972,214	48,338,792	136,955,714	141,077,688	139,594,700	28.5	31.9	34.6
Alabama	479,734	549,086	583,697	2,067,147	2,051,893	1,959,849	23.2	26.8	29.8
Alaska	87,739	96,854	102,828	299,324	320,590	330,597	29.3	30.2	31.1
Arizona	638,515	781,932	886,445	2,404,916	2,724,859	2,851,063	26.6	28.7	31.1
Arkansas	247,079	287,058	300,180	1,207,352	1,270,930	1,256,136	20.5	22.6	23.9
California	4,960,210	5,732,017	6,060,404	16,024,341	16,592,204	16,141,519	31.0	34.5	37.5
Colorado	819,906	936,007	1,030,750	2,300,192	2,455,773	2,501,834	35.6	38.1	41.2
Connecticut	633,867	707,700	720,251	1,697,670	1,718,608	1,730,053	37.3	41.2	41.6
Delaware	111,260	131,287	142,848	402,777	417,196	400,004	27.6	31.5	35.7
District of Columbia	133,155	150,461	175,217	291,916	298,611	300,011	45.6	50.4	58.4
Florida	1,968,126	2,398,022	2,556,593	7,569,406	8,305,281	8,209,092	26.0	28.9	31.1
Georgia	1,148,814	1,394,550	1,522,467	4,095,362	4,375,178	4,302,039	28.1	31.9	35.4
Hawaii	184,130	200,132	219,868	584,858	609,835	588,662	31.5	32.8	37.4
Idaho	149,622	178,690	194,255	632,451	695,428	693,045	23.7	25.7	28.0
Illinois	1,876,455	2,113,824	2,274,031	6,176,837	6,033,421	5,927,804	30.4	35.0	38.4
Indiana	672,835	745,940	821,279	3,052,719	3,032,108	2,851,776	22.0	24.6	28.8
Iowa	351,922	404,729	430,363	1,557,081	1,557,545	1,571,691	22.6	26.0	27.4
Kansas	385,924	425,214	458,499	1,351,988	1,390,292	1,401,609	28.5	30.6	32.7
Kentucky	402,094	467,998	528,477	1,866,348	1,875,512	1,857,576	21.5	25.0	28.4
Louisiana	453,353	496,071	531,693	1,930,662	1,935,850	1,923,739	23.5	25.6	27.6
Maine	170,334	193,647	205,731	650,385	658,507	641,189	26.2	29.4	32.1
Maryland	979,588	1,095,665	1,172,521	2,711,382	2,825,040	2,786,271	36.1	38.8	42.1
Massachusetts	1,266,113	1,387,065	1,502,257	3,273,281	3,219,717	3,190,462	38.7	43.1	47.1
Michigan	1,242,388	1,407,669	1,403,052	4,953,421	4,717,188	4,210,871	25.1	29.8	33.3
Minnesota	783,613	906,335	959,272	2,720,492	2,756,709	2,712,250	28.8	32.9	35.4
Mississippi	256,581	293,533	310,187	1,239,859	1,219,135	1,170,719	20.7	24.1	26.5
Missouri	695,491	792,737	860,322	2,875,336	2,849,708	2,768,144	24.2	27.8	31.1
Montana	124,462	139,593	148,144	446,552	463,251	465,220	27.9	30.1	31.8
Nebraska	230,857	267,867	277,140	923,198	935,447	934,161	25.0	28.6	29.7
Nevada	206,361	272,492	315,597	1,015,221	1,173,425	1,184,431	20.3	23.2	26.6
New Hampshire	207,431	243,698	246,364	675,541	696,765	698,317	30.7	35.0	35.3
New Jersey	1,510,429	1,734,942	1,785,522	4,130,310	4,207,738	4,116,398	36.6	41.2	43.4
New Mexico	226,334	252,804	263,798	810,024	866,349	876,218	27.9	29.2	30.1
New York	3,031,927	3,460,430	3,718,473	8,751,441	8,947,069	8,864,298	34.6	38.7	41.9
North Carolina	1,044,025	1,229,917	1,409,863	3,969,235	4,123,857	4,064,521	26.3	29.8	34.7
North Dakota	80,545	95,520	93,818	335,780	343,625	353,008	24.0	27.8	26.6
Ohio	1,375,311	1,521,816	1,612,549	5,573,154	5,537,419	5,334,774	24.7	27.5	30.2
Oklahoma	383,381	431,778	455,513	1,609,522	1,628,655	1,636,917	23.8	26.5	27.8
Oregon	488,862	564,786	636,155	1,716,954	1,740,990	1,759,757	28.5	32.4	36.2
Pennsylvania	1,618,658	1,842,351	1,954,078	5,830,902	5,958,238	5,869,594	27.8	30.9	33.3
Rhode Island	156,862	181,553	187,708	520,758	532,961	504,828	30.1	34.1	37.2
South Carolina	454,656	534,821	613,174	1,917,365	1,922,367	1,928,110	23.7	27.8	31.8
South Dakota	89,855	104,555	110,431	397,678	413,819	421,961	22.6	25.3	26.2
Tennessee	649,844	750,100	843,026	2,756,498	2,778,489	2,734,302	23.6	27.0	30.8
Texas	2,646,909	3,062,665	3,405,108	9,896,002	10,551,547	11,006,179	26.7	29.0	30.9
Utah	276,360	339,337	387,625	1,097,915	1,230,451	1,285,134	25.2	27.6	30.2
Vermont	103,476	118,184	116,812	326,742	336,583	335,328	31.7	35.1	34.8
Virginia	1,232,454	1,438,181	1,537,471	3,502,524	3,783,813	3,895,448	35.2	38.0	39.5
Washington	932,352	1,069,031	1,172,377	2,898,677	3,075,972	3,205,644	32.2	34.8	36.6
West Virginia	157,883	181,476	188,924	764,649	763,696	735,130	20.6	23.8	25.7
Wisconsin	690,065	791,966	834,930	2,894,884	2,890,117	2,829,348	23.8	27.4	29.5
Wyoming	60,451	68,128	70,705	256,685	267,927	277,669	23.6	25.4	25.5
Puerto Rico	378,586	454,714	495,726	1,162,153	1,250,335	1,126,992	32.6	36.4	44.0

NOTES: Bachelor's degree holders include those who completed a bachelor's or higher degree. Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted.

SOURCES: Census Bureau, 2000 Decennial Census and American Community Survey (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics.

Individuals in Science and Engineering Occupations as a Percentage of the Workforce

Figure 8-33
Individuals in science and engineering occupations as a percentage of the workforce: 2010



Findings

- In 2010, 4.0% of the U.S. workforce (about 5.5 million people), worked in occupations classified as S&E. This is an increase from the 5.0 million S&E workers in 2003.
- In 2010, the percentage of the workforce engaged in S&E occupations ranged from 2.0% to 6.6% in individual states.
- The highest percentages of S&E occupations were found in the District of Columbia and the adjacent states of Maryland and Virginia as well as in Massachusetts, Washington, and Colorado in 2010.

This indicator represents the extent to which a state's workforce is employed in S&E occupations. A high value indicates that a state's economy has a high percentage of technical jobs relative to other states.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies. Data on the size of the workforce are BLS estimates and represent the employed component of the civilian labor force. In these estimates, workers are assigned to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way the data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-33
Individuals in science and engineering occupations as a percentage of the workforce, by state: 2003, 2006, and 2010

State	S&E occupations			Employed workforce			Workforce in S&E occupations (%)		
	2003	2006	2010	2003	2006	2010	2003	2006	2010
United States	4,961,550	5,407,710	5,549,980	137,186,622	143,729,350	138,893,366	3.62	3.76	4.00
Alabama	56,380	66,100	68,450	1,989,784	2,098,462	1,925,064	2.83	3.15	3.56
Alaska	10,600	10,720	15,430	310,762	326,109	332,403	3.41	3.29	4.64
Arizona	92,120	98,110	102,870	2,573,137	2,836,638	2,859,967	3.58	3.46	3.60
Arkansas	21,340	24,860	29,200	1,195,942	1,286,887	1,246,647	1.78	1.93	2.34
California	676,180	730,010	758,830	16,200,064	16,821,266	15,916,288	4.17	4.34	4.77
Colorado	124,140	133,730	143,210	2,339,532	2,541,828	2,447,712	5.31	5.26	5.85
Connecticut	81,380	79,380	74,990	1,696,857	1,745,993	1,724,024	4.80	4.55	4.35
Delaware	17,370	21,550	20,920	403,504	424,618	389,583	4.30	5.08	5.37
District of Columbia	54,890	64,120	59,870	285,361	303,791	300,663	19.24	21.11	19.91
Florida	221,070	246,190	239,600	7,785,547	8,584,095	8,159,147	2.84	2.87	2.94
Georgia	144,170	136,470	145,220	4,173,787	4,500,150	4,213,719	3.45	3.03	3.45
Hawaii	16,090	18,940	19,500	592,469	617,807	587,407	2.72	3.07	3.32
Idaho	22,150	NA	24,130	652,161	718,077	687,321	3.40	NA	3.51
Illinois	211,230	222,470	197,120	5,916,830	6,225,095	5,964,868	3.57	3.57	3.30
Indiana	78,410	80,110	90,710	2,997,847	3,080,047	2,822,693	2.62	2.60	3.21
Iowa	37,320	43,670	44,140	1,537,341	1,595,136	1,568,012	2.43	2.74	2.82
Kansas	51,970	48,620	48,970	1,364,787	1,403,938	1,396,558	3.81	3.46	3.51
Kentucky	45,230	44,680	48,790	1,848,059	1,904,467	1,865,961	2.45	2.35	2.61
Louisiana	41,900	40,180	44,200	1,898,829	1,900,240	1,926,492	2.21	2.11	2.29
Maine	15,020	15,950	17,470	650,458	665,856	641,978	2.31	2.40	2.72
Maryland	149,250	159,470	166,700	2,741,325	2,892,733	2,758,219	5.44	5.51	6.04
Massachusetts	184,690	198,670	208,160	3,209,062	3,255,504	3,197,210	5.76	6.10	6.51
Michigan	182,940	208,520	176,570	4,675,567	4,722,716	4,192,819	3.91	4.42	4.21
Minnesota	117,120	125,930	125,100	2,750,938	2,774,524	2,746,492	4.26	4.54	4.55
Mississippi	22,190	24,910	23,770	1,226,293	1,199,871	1,176,340	1.81	2.08	2.02
Missouri	84,150	96,420	102,300	2,813,571	2,889,461	2,725,527	2.99	3.34	3.75
Montana	11,450	13,010	14,620	450,190	476,412	461,337	2.54	2.73	3.17
Nebraska	30,710	32,500	30,930	931,622	943,176	931,414	3.30	3.45	3.32
Nevada	22,330	26,930	26,840	1,093,507	1,222,277	1,149,537	2.04	2.20	2.33
New Hampshire	23,430	27,680	29,200	679,420	708,748	698,859	3.45	3.91	4.18
New Jersey	161,420	176,460	185,360	4,108,397	4,257,899	4,076,713	3.93	4.14	4.55
New Mexico	33,600	30,800	36,130	835,835	886,708	873,112	4.02	3.47	4.14
New York	272,440	306,810	NA	8,703,889	9,062,464	8,806,778	3.13	3.39	NA
North Carolina	132,440	138,790	155,030	3,973,635	4,261,325	4,036,343	3.33	3.26	3.84
North Dakota	8,430	9,360	11,050	336,353	349,368	355,615	2.51	2.68	3.11
Ohio	177,100	185,190	195,840	5,498,936	5,602,764	5,303,019	3.22	3.31	3.69
Oklahoma	44,360	50,770	44,190	1,598,614	1,650,070	1,630,925	2.77	3.08	2.71
Oregon	61,230	64,520	NA	1,699,679	1,792,039	1,769,599	3.60	3.60	NA
Pennsylvania	185,560	214,910	NA	5,795,701	6,021,084	5,791,061	3.20	3.57	NA
Rhode Island	18,740	18,060	18,210	533,265	543,973	509,073	3.51	3.32	3.58
South Carolina	48,740	53,230	56,230	1,854,419	1,970,912	1,922,815	2.63	2.70	2.92
South Dakota	9,150	10,120	11,150	408,089	421,799	422,562	2.24	2.40	2.64
Tennessee	63,680	67,040	71,850	2,731,371	2,852,509	2,759,243	2.33	2.35	2.60
Texas	365,270	408,710	451,390	10,228,640	10,757,510	11,141,903	3.57	3.80	4.05
Utah	45,570	49,690	50,830	1,139,129	1,285,389	1,262,083	4.00	3.87	4.03
Vermont	11,420	12,780	12,670	331,292	343,149	338,295	3.45	3.72	3.75
Virginia	209,280	251,720	255,800	3,647,095	3,862,508	3,896,167	5.74	6.52	6.57
Washington	150,230	171,780	186,210	2,913,230	3,155,384	3,192,117	5.16	5.44	5.83
West Virginia	16,220	17,150	17,070	742,424	777,210	711,068	2.18	2.21	2.40
Wisconsin	93,320	96,860	99,240	2,862,587	2,932,482	2,807,301	3.26	3.30	3.54
Wyoming	6,130	7,640	8,260	259,489	276,882	273,313	2.36	2.76	3.02
Puerto Rico	19,940	23,850	20,850	1,200,322	1,260,703	1,088,762	1.66	1.89	1.92

NA = not available

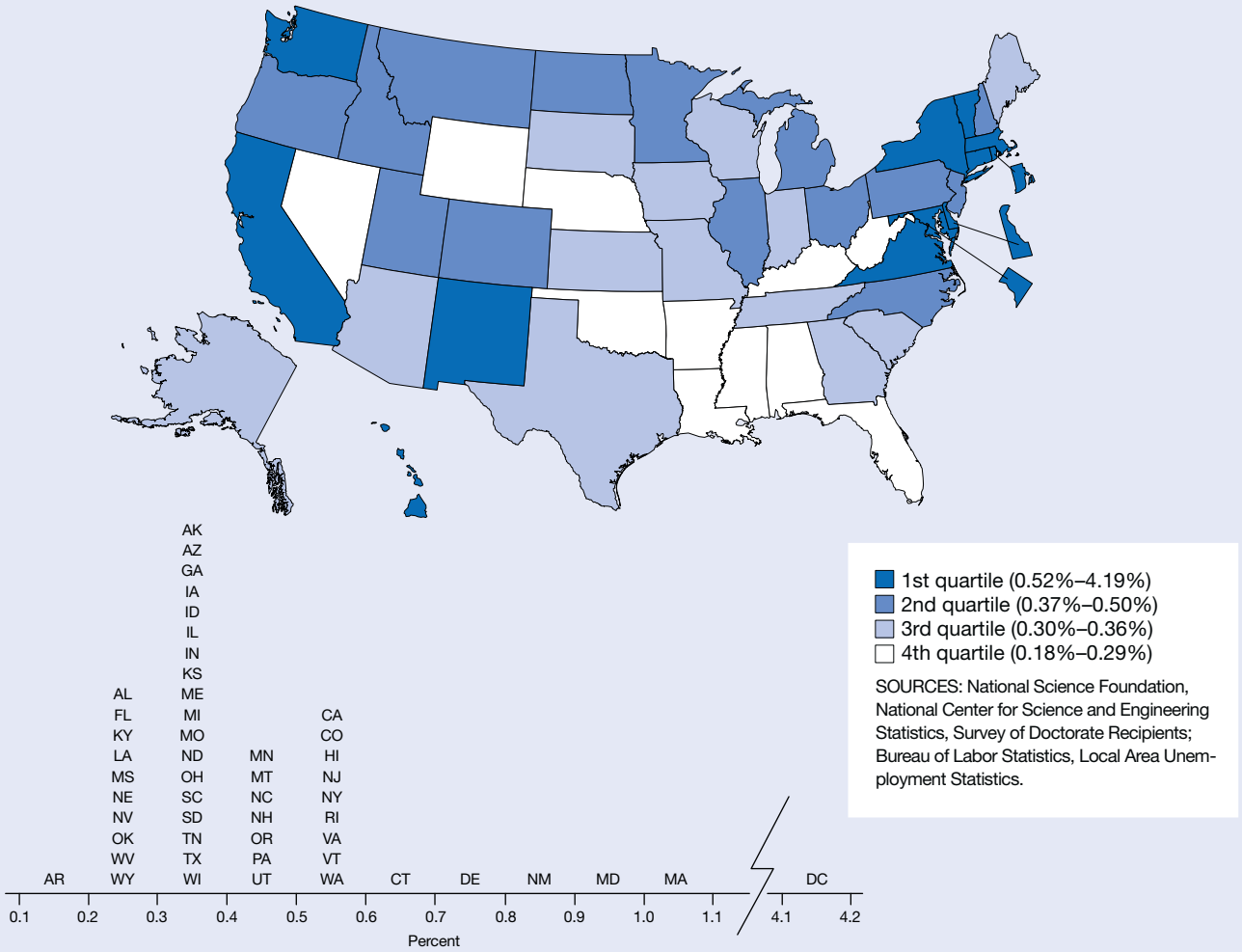
NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES) and includes states with suppressed data. OES estimates for 2003, 2006, and 2010 S&E occupations based upon May data.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates and Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Employed Science and Engineering Doctorate Holders as a Percentage of the Workforce

Figure 8-34
Employed science and engineering doctorate holders as a percentage of the workforce: 2008



Findings

- The number of employed S&E doctorate holders in the United States rose from 517,000 in 1997 to 648,000 in 2008, an increase of 25%.
- Overall, the value of this indicator rose from 0.39% in 1997 to 0.45% in 2008 because the number of employed S&E doctorate holders nationwide increased more rapidly than the size of the workforce.
- In 2008, the values for this indicator in individual states ranged from 0.18% to 1.07% of a state's workforce.
- States in the top quartile tended to be home to major research laboratories, research universities, or research-intensive industries.

This indicator represents a state's ability to attract and retain highly trained scientists and engineers. These individuals often conduct R&D, manage R&D activities, or are otherwise engaged in knowledge-intensive activities. A high value for this indicator in a state suggests employment opportunities for individuals with highly advanced training in S&E fields.

Data on employed S&E doctorate holders include those with doctoral degrees in computer and mathematical sciences; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data exclude individuals with doctorates from foreign institutions and those above the age of 75. S&E doctorate holders are assigned to a state based on where they work.

Employed workforce data are developed by the Bureau of Labor Statistics, which assigns workers to a state based on where they live. Workforce data represent annual estimates of the employed civilian labor force; estimates are not seasonally adjusted.

Small differences in the values of the indicator between states or across time are generally not meaningful.

Table 8-34
Employed science and engineering doctorate holders as a percentage of the workforce, by state: 1997, 2003, and 2008

State	Employed S&E doctorate holders[a]			Employed workforce			S&E doctorate holders in workforce (%)		
	1997	2003	2008	1997	2003	2008	1997	2003	2008
United States	516,560	590,910	647,800	130,988,267	137,186,622	144,860,347	0.39	0.43	0.45
Alabama	6,610	5,730	6,000	2,035,156	1,989,784	2,061,601	0.32	0.29	0.29
Alaska	1,110	1,140	1,200	289,963	310,762	332,389	0.38	0.37	0.36
Arizona	6,280	7,500	8,800	2,196,901	2,573,137	2,934,136	0.29	0.29	0.30
Arkansas	2,320	2,790	2,400	1,177,143	1,195,942	1,300,420	0.20	0.23	0.18
California	70,490	86,550	95,700	14,780,791	16,200,064	16,883,425	0.48	0.53	0.57
Colorado	10,740	12,220	13,100	2,154,294	2,339,532	2,605,535	0.50	0.52	0.50
Connecticut	8,770	9,780	10,600	1,674,937	1,696,857	1,763,911	0.52	0.58	0.60
Delaware	3,710	3,000	3,300	378,117	403,504	419,184	0.98	0.74	0.79
District of Columbia	11,800	13,800	13,100	262,789	285,361	312,877	4.49	4.84	4.19
Florida	13,330	16,000	18,600	7,040,660	7,785,547	8,621,454	0.19	0.21	0.22
Georgia	9,880	12,220	13,500	3,751,699	4,173,787	4,517,730	0.26	0.29	0.30
Hawaii	2,550	3,040	3,200	566,766	592,469	613,803	0.45	0.51	0.52
Idaho	2,030	2,450	2,800	598,004	652,161	722,714	0.34	0.38	0.39
Illinois	21,260	22,400	24,200	5,988,296	5,916,830	6,247,985	0.36	0.38	0.39
Indiana	7,570	9,590	10,300	3,014,499	2,997,847	3,049,268	0.25	0.32	0.34
Iowa	4,120	4,660	5,200	1,555,837	1,537,341	1,607,923	0.26	0.30	0.32
Kansas	3,770	4,060	4,300	1,329,797	1,364,787	1,421,107	0.28	0.30	0.30
Kentucky	4,110	4,720	4,800	1,809,785	1,848,059	1,898,083	0.23	0.26	0.25
Louisiana	5,360	5,420	5,200	1,890,102	1,898,829	1,974,881	0.28	0.29	0.26
Maine	2,150	2,110	2,300	624,410	650,458	665,057	0.34	0.32	0.35
Maryland	21,020	25,280	28,100	2,646,200	2,741,325	2,900,018	0.79	0.92	0.97
Massachusetts	23,330	30,220	35,000	3,158,851	3,209,062	3,283,147	0.74	0.94	1.07
Michigan	15,050	17,130	16,700	4,748,691	4,675,567	4,554,464	0.32	0.37	0.37
Minnesota	9,810	11,110	12,600	2,605,673	2,750,938	2,778,500	0.38	0.40	0.45
Mississippi	3,000	3,120	3,300	1,200,845	1,226,293	1,205,464	0.25	0.25	0.27
Missouri	9,490	9,080	10,000	2,780,185	2,813,571	2,869,569	0.34	0.32	0.35
Montana	1,690	1,740	2,100	427,504	450,190	485,375	0.40	0.39	0.43
Nebraska	3,010	2,820	2,800	904,492	931,622	960,438	0.33	0.30	0.29
Nevada	1,620	2,070	2,800	895,258	1,093,507	1,246,696	0.18	0.19	0.22
New Hampshire	2,230	2,640	2,900	635,469	679,420	716,611	0.35	0.39	0.40
New Jersey	20,440	20,980	21,300	4,031,022	4,108,397	4,256,251	0.51	0.51	0.50
New Mexico	7,480	8,120	7,800	768,596	835,835	909,809	0.97	0.97	0.86
New York	40,080	44,890	49,000	8,416,544	8,703,889	9,138,034	0.48	0.52	0.54
North Carolina	13,730	17,380	20,100	3,809,601	3,973,635	4,291,565	0.36	0.44	0.47
North Dakota	1,350	1,130	1,300	335,854	336,353	355,622	0.40	0.34	0.37
Ohio	18,700	20,870	20,800	5,448,161	5,498,936	5,570,514	0.34	0.38	0.37
Oklahoma	4,580	4,640	4,500	1,543,105	1,598,614	1,674,485	0.30	0.29	0.27
Oregon	6,210	7,830	8,700	1,652,997	1,699,679	1,828,477	0.38	0.46	0.48
Pennsylvania	23,940	27,820	30,000	5,775,178	5,795,701	6,095,678	0.41	0.48	0.49
Rhode Island	2,450	3,170	2,800	504,147	533,265	528,288	0.49	0.59	0.53
South Carolina	4,780	5,210	6,300	1,819,508	1,854,419	1,998,171	0.26	0.28	0.32
South Dakota	1,060	1,020	1,300	383,216	408,089	432,130	0.28	0.25	0.30
Tennessee	8,520	8,840	10,100	2,640,005	2,731,371	2,854,488	0.32	0.32	0.35
Texas	28,570	33,280	39,900	9,395,279	10,228,640	11,070,779	0.30	0.33	0.36
Utah	4,800	4,240	5,600	1,034,429	1,139,129	1,324,467	0.46	0.37	0.42
Vermont	1,750	1,770	1,800	315,806	331,292	342,130	0.55	0.53	0.53
Virginia	15,250	18,880	21,300	3,323,266	3,647,095	3,954,733	0.46	0.52	0.54
Washington	13,360	15,430	17,700	2,822,223	2,913,230	3,286,973	0.47	0.53	0.54
West Virginia	1,980	1,980	2,000	746,442	742,424	770,845	0.27	0.27	0.26
Wisconsin	8,460	8,390	9,900	2,855,830	2,862,587	2,936,749	0.30	0.29	0.34
Wyoming	860	650	700	243,944	259,489	286,394	0.35	0.25	0.24
Puerto Rico	660	1,710	2,000	1,132,658	1,200,322	1,208,595	0.06	0.14	0.17

[a]Coefficients of variation for estimates of employed S&E doctorate holders presented in appendix table 8-13.

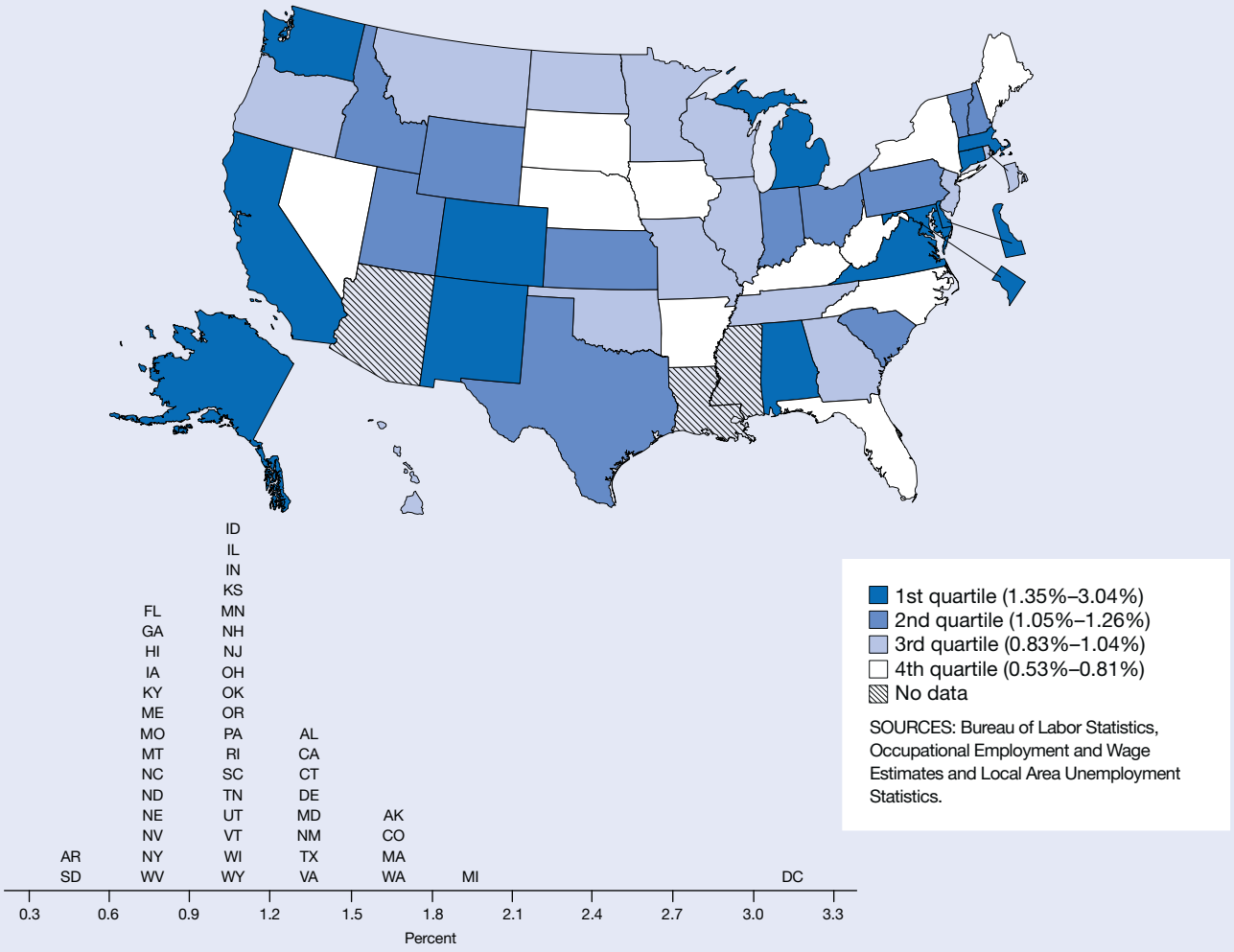
NOTE: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Engineers as a Percentage of the Workforce

Figure 8-35
Engineers as a percentage of the workforce: 2010



Findings

- In the United States, 1.55 million individuals were employed in engineering occupations in 2010, an increase from the 1.49 million engineers employed in 2004. Between 2004 and 2010, the percentage of the workforce employed in engineering occupations increased from 1.07% to 1.12%.
- The concentration of engineers in individual states ranged from 0.53% to 1.95% in 2010.
- The states with the highest percentage of engineers in their workforces were centers of automobile and aircraft manufacturing.
- States ranking highest on this indicator also ranked high on employment in high-technology establishments as share of total employment.

Engineers design and operate production processes and create new products and services. This indicator represents the percentage of trained engineers in a state's workforce. It includes the standard occupational codes for engineering fields: aerospace, agricultural, biomedical, chemical, civil, computer hardware, electrical and electronics, environmental, industrial, marine and naval architectural, materials, mechanical, mining and geological, nuclear, and petroleum.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies. Data on the size of the workforce are BLS estimates and represent the employed component of the civilian labor force. In these estimates, workers are assigned to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way the data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-35
Engineers as a percentage of the workforce, by state: 2004, 2007, and 2010

State	Engineers			Employed workforce			Engineers in workforce (%)		
	2004	2007	2010	2004	2007	2010	2004	2007	2010
United States	1,487,810	1,588,350	1,554,780	138,762,591	145,156,139	138,893,366	1.07	1.09	1.12
Alabama	23,050	27,860	27,480	2,007,153	2,108,873	1,925,064	1.15	1.32	1.43
Alaska	3,410	3,820	5,600	314,753	329,431	332,403	1.08	1.16	1.68
Arizona	36,630	35,490	NA	2,650,277	2,903,992	2,859,967	1.38	1.22	NA
Arkansas	6,760	7,670	6,630	1,221,553	1,293,947	1,246,647	0.55	0.59	0.53
California	227,310	241,970	222,580	16,354,779	16,970,228	15,916,288	1.39	1.43	1.40
Colorado	34,390	38,580	37,590	2,392,952	2,598,433	2,447,712	1.44	1.48	1.54
Connecticut	25,960	24,310	23,210	1,703,865	1,761,588	1,724,024	1.52	1.38	1.35
Delaware	3,950	4,830	5,270	408,266	425,289	389,583	0.97	1.14	1.35
District of Columbia	9,760	7,840	9,140	288,397	310,652	300,663	3.38	2.52	3.04
Florida	61,830	70,400	63,170	7,998,202	8,704,110	8,159,147	0.77	0.81	0.77
Georgia	30,620	33,080	36,040	4,249,007	4,561,967	4,213,719	0.72	0.73	0.86
Hawaii	4,770	5,020	5,150	598,175	617,891	587,407	0.80	0.81	0.88
Idaho	8,830	8,360	7,490	666,080	731,362	687,321	1.33	1.14	1.09
Illinois	58,180	56,380	58,000	5,968,561	6,323,515	5,964,868	0.97	0.89	0.97
Indiana	31,160	28,110	30,150	2,997,800	3,081,177	2,822,693	1.04	0.91	1.07
Iowa	9,820	10,410	11,210	1,534,991	1,601,547	1,568,012	0.64	0.65	0.71
Kansas	19,080	16,910	14,680	1,381,343	1,415,942	1,396,558	1.38	1.19	1.05
Kentucky	13,230	13,520	13,530	1,854,703	1,915,131	1,865,961	0.71	0.71	0.73
Louisiana	15,130	15,170	NA	1,928,464	1,941,642	1,926,492	0.78	0.78	NA
Maine	4,510	4,000	4,620	653,847	666,305	641,978	0.69	0.60	0.72
Maryland	36,910	38,730	39,750	2,761,583	2,909,290	2,758,219	1.34	1.33	1.44
Massachusetts	51,450	52,820	49,510	3,203,810	3,280,932	3,197,210	1.61	1.61	1.55
Michigan	91,000	101,730	81,730	4,686,953	4,680,780	4,192,819	1.94	2.17	1.95
Minnesota	28,990	28,790	28,280	2,752,403	2,775,587	2,746,492	1.05	1.04	1.03
Mississippi	8,320	9,790	NA	1,232,139	1,210,732	1,176,340	0.68	0.81	NA
Missouri	22,700	25,880	22,910	2,815,878	2,899,695	2,725,527	0.81	0.89	0.84
Montana	2,600	3,200	3,810	456,385	485,132	461,337	0.57	0.66	0.83
Nebraska	5,690	5,840	5,940	938,105	953,057	931,414	0.61	0.61	0.64
Nevada	7,380	8,100	7,840	1,128,223	1,247,491	1,149,537	0.65	0.65	0.68
New Hampshire	8,120	8,140	8,000	687,855	715,310	698,859	1.18	1.14	1.14
New Jersey	38,540	39,960	37,870	4,144,223	4,265,294	4,076,713	0.93	0.94	0.93
New Mexico	10,550	11,290	12,830	849,970	901,704	873,112	1.24	1.25	1.47
New York	65,710	69,400	65,420	8,816,013	9,112,899	8,806,778	0.75	0.76	0.74
North Carolina	31,030	32,500	32,620	4,031,081	4,321,339	4,036,343	0.77	0.75	0.81
North Dakota	2,100	2,500	2,950	339,541	353,214	355,615	0.62	0.71	0.83
Ohio	60,790	57,720	56,790	5,502,533	5,626,086	5,303,019	1.10	1.03	1.07
Oklahoma	13,830	13,690	15,350	1,605,641	1,665,819	1,630,925	0.86	0.82	0.94
Oregon	19,260	18,870	18,320	1,714,447	1,822,010	1,769,599	1.12	1.04	1.04
Pennsylvania	56,950	61,720	63,940	5,859,561	6,054,254	5,791,061	0.97	1.02	1.10
Rhode Island	5,470	5,240	5,230	526,046	545,252	509,073	1.04	0.96	1.03
South Carolina	21,560	22,210	22,570	1,888,050	2,000,185	1,922,815	1.14	1.11	1.17
South Dakota	2,040	NA	2,380	411,708	428,850	422,562	0.50	NA	0.56
Tennessee	22,000	21,940	25,260	2,746,241	2,874,173	2,759,243	0.80	0.76	0.92
Texas	119,360	130,990	140,560	10,385,318	10,925,311	11,141,903	1.15	1.20	1.26
Utah	12,050	13,810	14,430	1,179,142	1,319,933	1,262,083	1.02	1.05	1.14
Vermont	3,730	3,670	3,700	334,188	341,588	338,295	1.12	1.07	1.09
Virginia	49,810	52,570	53,270	3,715,272	3,926,052	3,896,167	1.34	1.34	1.37
Washington	36,690	NA	54,830	2,999,526	3,235,735	3,192,117	1.22	NA	1.72
West Virginia	4,920	5,340	4,960	746,854	780,869	711,068	0.66	0.68	0.70
Wisconsin	29,170	31,010	28,820	2,868,376	2,951,001	2,807,301	1.02	1.05	1.03
Wyoming	2,300	2,840	3,140	262,358	283,543	273,313	0.88	1.00	1.15
Puerto Rico	7,370	NA	7,460	1,226,251	1,241,426	1,088,762	0.60	NA	0.69

NA = not available

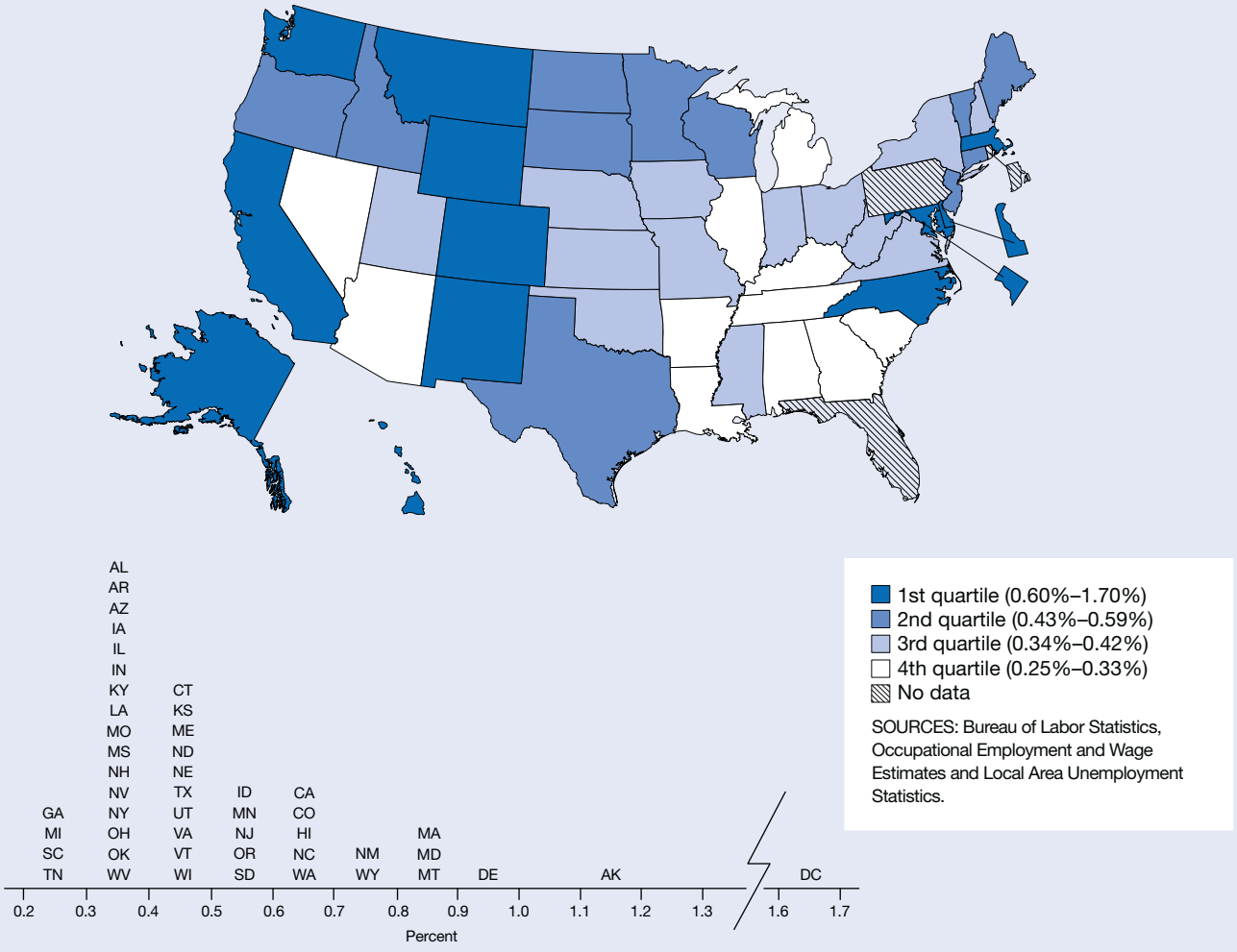
NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. National totals for engineers in the United States provided by Occupational Employment Statistics and includes states with suppressed data.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates and Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Life and Physical Scientists as a Percentage of the Workforce

Figure 8-36
Life and physical scientists as a percentage of the workforce: 2010



Findings

- About 629,000 individuals (0.45% of the workforce) were employed as life and physical scientists in the United States in 2010, an increase from the 549,000 life and physical scientists employed in 2004, which represented 0.40% of the workforce.
- In 2010, individual states had indicator values ranging from 0.25% to 1.18%, which showed major differences in the concentration of jobs in the life and physical sciences.
- States with the highest concentrations of life and physical scientists in their workforces were fairly evenly distributed throughout the United States.

This indicator represents the percentage of life and physical scientists in a state's workforce. Life scientists are identified from standard occupational codes that include agricultural and food scientists, biological scientists, conservation scientists and foresters, and medical scientists. Physical scientists are identified from standard occupational codes that include astronomers, physicists, atmospheric and space scientists, chemists, materials scientists, environmental scientists, and geoscientists. A high share of life and physical scientists in a state's workforce could indicate several scenarios, ranging from a robust cluster of life sciences companies to the presence of forests or national parks, which require foresters, wildlife specialists, and conservationists to manage the natural assets in these areas.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies. Data on the size of the workforce are BLS estimates and represent the employed component of the civilian labor force. In these estimates, workers are assigned to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way data are collected, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-36
Life and physical scientists as a percentage of the workforce, by state: 2004, 2007, and 2010

State	Life and physical scientists			Employed workforce			Life and physical scientists in workforce (%)		
	2004	2007	2010	2004	2007	2010	2004	2007	2010
United States	548,860	602,360	629,280	138,762,591	145,156,139	138,893,366	0.40	0.41	0.45
Alabama	5,650	7,240	6,200	2,007,153	2,108,873	1,925,064	0.28	0.34	0.32
Alaska	3,100	3,550	3,930	314,753	329,431	332,403	0.98	1.08	1.18
Arizona	7,040	7,300	8,950	2,650,277	2,903,992	2,859,967	0.27	0.25	0.31
Arkansas	3,250	3,680	3,760	1,221,553	1,293,947	1,246,647	0.27	0.28	0.30
California	69,820	78,130	95,730	16,354,779	16,970,228	15,916,288	0.43	0.46	0.60
Colorado	11,030	14,800	15,290	2,392,952	2,598,433	2,447,712	0.46	0.57	0.62
Connecticut	8,610	7,330	8,060	1,703,865	1,761,588	1,724,024	0.51	0.42	0.47
Delaware	3,030	3,110	3,650	408,266	425,289	389,583	0.74	0.73	0.94
District of Columbia	5,980	6,290	5,100	288,397	310,652	300,663	2.07	2.02	1.70
Florida	21,620	21,920	NA	7,998,202	8,704,110	8,159,147	0.27	0.25	NA
Georgia	10,960	8,860	10,520	4,249,007	4,561,967	4,213,719	0.26	0.19	0.25
Hawaii	3,060	3,810	3,620	598,175	617,891	587,407	0.51	0.62	0.62
Idaho	3,980	3,500	3,740	666,080	731,362	687,321	0.60	0.48	0.54
Illinois	19,440	20,540	19,950	5,968,561	6,323,515	5,964,868	0.33	0.32	0.33
Indiana	9,820	10,990	10,880	2,997,800	3,081,177	2,822,693	0.33	0.36	0.39
Iowa	4,010	5,660	5,570	1,534,991	1,601,547	1,568,012	0.26	0.35	0.36
Kansas	4,280	4,900	5,780	1,381,343	1,415,942	1,396,558	0.31	0.35	0.41
Kentucky	4,740	5,350	5,550	1,854,703	1,915,131	1,865,961	0.26	0.28	0.30
Louisiana	6,410	NA	5,720	1,928,464	1,941,642	1,926,492	0.33	NA	0.30
Maine	2,400	2,750	2,830	653,847	666,305	641,978	0.37	0.41	0.44
Maryland	21,040	21,270	22,190	2,761,583	2,909,290	2,758,219	0.76	0.73	0.80
Massachusetts	20,300	24,030	27,470	3,203,810	3,280,932	3,197,210	0.63	0.73	0.86
Michigan	13,140	NA	12,030	4,686,953	4,680,780	4,192,819	0.28	NA	0.29
Minnesota	11,980	13,550	14,670	2,752,403	2,775,587	2,746,492	0.44	0.49	0.53
Mississippi	4,040	4,460	4,480	1,232,139	1,210,732	1,176,340	0.33	0.37	0.38
Missouri	10,210	10,960	9,560	2,815,878	2,899,695	2,725,527	0.36	0.38	0.35
Montana	3,050	NA	3,920	456,385	485,132	461,337	0.67	NA	0.85
Nebraska	4,170	3,550	3,740	938,105	953,057	931,414	0.44	0.37	0.40
Nevada	3,120	3,490	3,690	1,128,223	1,247,491	1,149,537	0.28	0.28	0.32
New Hampshire	1,880	3,170	2,650	687,855	715,310	698,859	0.27	0.44	0.38
New Jersey	22,420	21,820	24,040	4,144,223	4,265,294	4,076,713	0.54	0.51	0.59
New Mexico	2,040	NA	6,450	849,970	901,704	873,112	0.24	NA	0.74
New York	30,060	30,850	29,560	8,816,013	9,112,899	8,806,778	0.34	0.34	0.34
North Carolina	16,990	19,670	24,300	4,031,081	4,321,339	4,036,343	0.42	0.46	0.60
North Dakota	1,520	1,720	1,620	339,541	353,214	355,615	0.45	0.49	0.46
Ohio	15,310	18,430	17,940	5,502,533	5,626,086	5,303,019	0.28	0.33	0.34
Oklahoma	6,550	6,710	5,540	1,605,641	1,665,819	1,630,925	0.41	0.40	0.34
Oregon	8,090	8,530	9,380	1,714,447	1,822,010	1,769,599	0.47	0.47	0.53
Pennsylvania	25,030	26,980	NA	5,859,561	6,054,254	5,791,061	0.43	0.45	NA
Rhode Island	2,810	2,220	NA	526,046	545,252	509,073	0.53	0.41	NA
South Carolina	5,780	5,180	5,290	1,888,050	2,000,185	1,922,815	0.31	0.26	0.28
South Dakota	1,800	NA	2,300	411,708	428,850	422,562	0.44	NA	0.54
Tennessee	6,920	8,180	6,830	2,746,241	2,874,173	2,759,243	0.25	0.28	0.25
Texas	50,940	52,630	48,850	10,385,318	10,925,311	11,141,903	0.49	0.48	0.44
Utah	5,630	6,500	5,300	1,179,142	1,319,933	1,262,083	0.48	0.49	0.42
Vermont	1,370	1,720	1,470	334,188	341,588	338,295	0.41	0.50	0.43
Virginia	13,200	14,510	15,990	3,715,272	3,926,052	3,896,167	0.36	0.37	0.41
Washington	18,490	NA	22,020	2,999,526	3,235,735	3,192,117	0.62	NA	0.69
West Virginia	3,170	3,010	2,780	746,854	780,869	711,068	0.42	0.39	0.39
Wisconsin	11,970	14,590	12,990	2,868,376	2,951,001	2,807,301	0.42	0.49	0.46
Wyoming	1,960	2,260	2,100	262,358	283,543	273,313	0.75	0.80	0.77
Puerto Rico	4,790	NA	4,210	1,226,251	1,241,426	1,088,762	0.39	NA	0.39

NA = not available

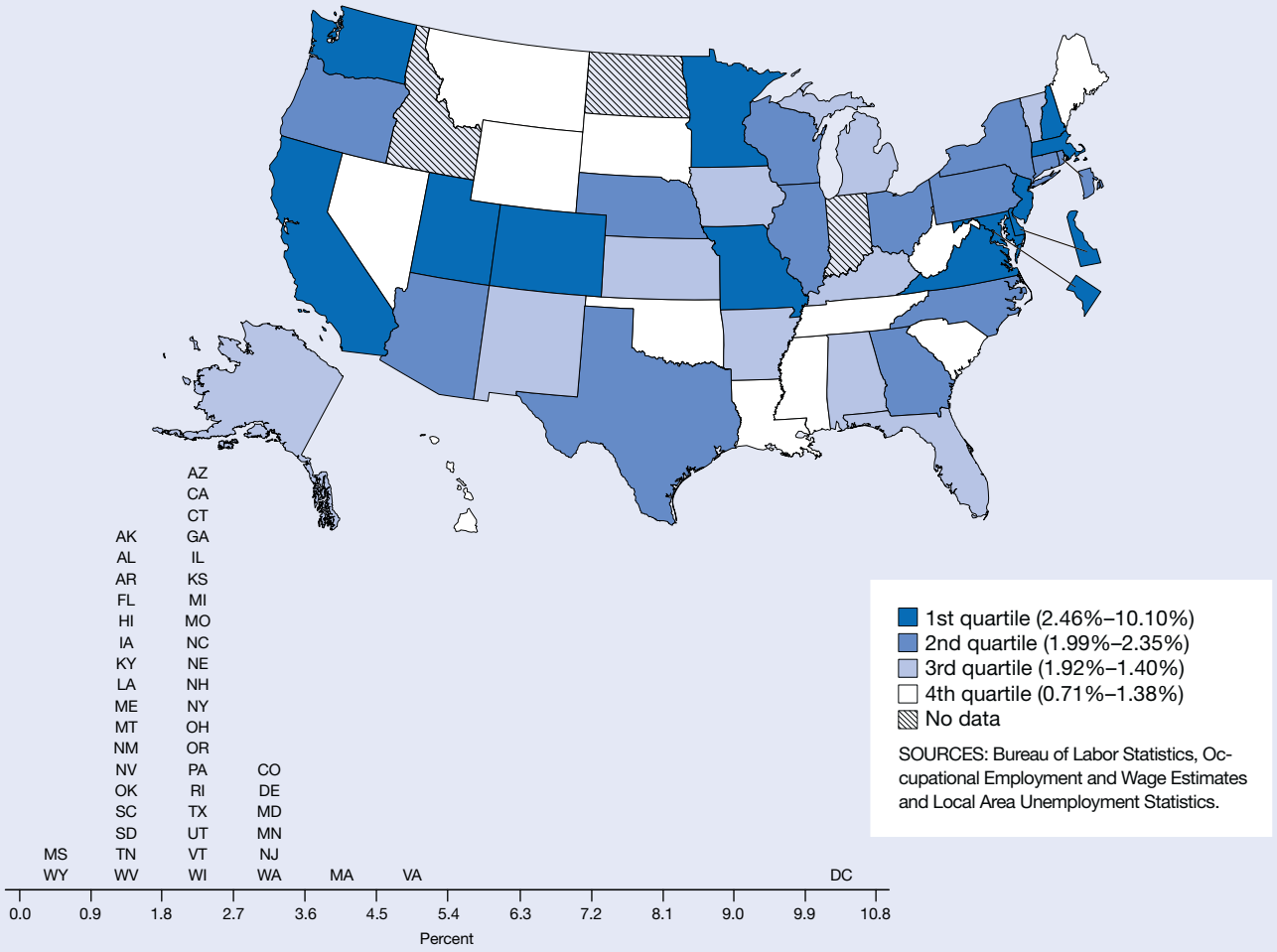
NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. National totals for life and physical scientists in the United States provided by Occupational Employment Statistics and include states with suppressed data.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates and Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Computer Specialists as a Percentage of the Workforce

Figure 8-37
Computer specialists as a percentage of the workforce: 2010



Findings

- In the United States, 3.11 million individuals (2.24% of the workforce) were employed as computer specialists in 2010, an increase from the 2.81 million computer specialists employed in 2004, which accounted for 2.03% of the workforce.
- Individual states showed large differences in the intensity of computer-related operations in their economies, with 0.71% to 4.51% of their workforce employed in computer-related occupations in 2010.
- There was a significant concentration of computer-intensive occupations in the District of Columbia and the adjacent states of Maryland and Virginia. This may be due to the presence of many government offices, colleges and universities, and government contractors in the area that employ scientists and engineers, especially computer scientists.
- EPSCoR states tended to have smaller percentages of computer specialists in their workforces and accounted in total for nearly 12% of computer specialists nationally.

This indicator represents the percent of specialists with advanced computer training in a state's workforce. Computer specialists are identified from 10 standard occupational codes that include computer and information scientists, programmers, software engineers, support specialists, systems analysts, database administrators, and network and computer system administrators. Higher values may indicate a state workforce that is better able to thrive in an information economy or to embrace and utilize computer technology.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies. Data on the size of the workforce are BLS estimates and represent the employed component of the civilian labor force. In these estimates, workers are assigned to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-37
Computer specialists as a percentage of the workforce, by state: 2004, 2007, and 2010

State	Computer specialists			Employed workforce			Computer specialists in workforce (%)		
	2004	2007	2010	2004	2007	2010	2004	2007	2010
EPSCoR states	285,770	317,290	315,910	22,441,400	23,358,559	22,453,679	1.27	1.36	1.41
Non-EPSCoR states	2,494,820	2,713,430	2,765,040	116,032,794	121,486,928	116,139,024	2.15	2.23	2.38
Average EPSCoR state value	na	na	na	na	na	na	1.32	1.38	1.54
Average non-EPSCoR state value	na	na	na	na	na	na	2.21	2.27	2.49
United States	2,811,480	3,062,930	3,111,330	138,762,591	145,156,139	138,893,366	2.03	2.11	2.24
Alabama	29,760	33,010	34,450	2,007,153	2,108,873	1,925,064	1.48	1.57	1.79
Alaska	3,430	3,720	4,770	314,753	329,431	332,403	1.09	1.13	1.44
Arizona	47,170	54,520	58,490	2,650,277	2,903,992	2,859,967	1.78	1.88	2.05
Arkansas	12,140[a]	15,500	18,420	1,221,553	1,293,947	1,246,647	0.99	1.20	1.48
California	368,000	383,900	408,810	16,354,779	16,970,228	15,916,288	2.25	2.26	2.57
Colorado	74,450	79,930	84,500	2,392,952	2,598,433	2,447,712	3.11	3.08	3.45
Connecticut	45,030	40,900	40,520	1,703,865	1,761,588	1,724,024	2.64	2.32	2.35
Delaware	10,240[a]	11,950	11,680	408,266	425,289	389,583	2.51	2.81	3.00
District of Columbia	30,890	32,210	30,380	288,397	310,652	300,663	10.71	10.37	10.10
Florida	139,510	141,320	145,710	7,998,202	8,704,110	8,159,147	1.74	1.62	1.79
Georgia	92,680	86,210	94,050	4,249,007	4,561,967	4,213,719	2.18	1.89	2.23
Hawaii	7,810	7,840	8,070	598,175	617,891	587,407	1.31	1.27	1.37
Idaho	8,510	9,410	NA	666,080	731,362	687,321	1.28	1.29	NA
Illinois	115,550[a]	137,420	124,300	5,968,561	6,323,515	5,964,868	1.94	2.17	2.08
Indiana	36,660	39,850	NA	2,997,800	3,081,177	2,822,693	1.22	1.29	NA
Iowa	22,620	26,400	25,460	1,534,991	1,601,547	1,568,012	1.47	1.65	1.62
Kansas	20,890	25,750	26,810	1,381,343	1,415,942	1,396,558	1.51	1.82	1.92
Kentucky	23,170	24,250	26,090	1,854,703	1,915,131	1,865,961	1.25	1.27	1.40
Louisiana	19,170	16,020	17,420	1,928,464	1,941,642	1,926,492	0.99	0.83	0.90
Maine	6,890	7,660	8,610	653,847	666,305	641,978	1.05	1.15	1.34
Maryland	88,260	89,900	94,120	2,761,583	2,909,290	2,758,219	3.20	3.09	3.41
Massachusetts	105,670	111,910	120,720	3,203,810	3,280,932	3,197,210	3.30	3.41	3.78
Michigan	79,490[a]	88,980	77,750	4,686,953	4,680,780	4,192,819	1.70	1.90	1.85
Minnesota	66,520	75,230	77,820	2,752,403	2,775,587	2,746,492	2.42	2.71	2.83
Mississippi	8,500	9,290	8,330	1,232,139	1,210,732	1,176,340	0.69	0.77	0.71
Missouri	57,890	61,000	68,500	2,815,878	2,899,695	2,725,527	2.06	2.10	2.51
Montana	4,700[a]	5,170	5,900	456,385	485,132	461,337	1.03	1.07	1.28
Nebraska	19,520[a]	20,410	21,360	938,105	953,057	931,414	2.08	2.14	2.29
Nevada	11,410	12,880	13,870	1,128,223	1,247,491	1,149,537	1.01	1.03	1.21
New Hampshire	14,170	16,780	17,680	687,855	715,310	698,859	2.06	2.35	2.53
New Jersey	111,890	121,690	127,160	4,144,223	4,265,294	4,076,713	2.70	2.85	3.12
New Mexico	8,740[a]	11,490	13,030	849,970	901,704	873,112	1.03	1.27	1.49
New York	177,010	200,900	195,990	8,816,013	9,112,899	8,806,778	2.01	2.20	2.23
North Carolina	78,040	81,630	90,640	4,031,081	4,321,339	4,036,343	1.94	1.89	2.25
North Dakota	4,470	3,140	NA	339,541	353,214	355,615	1.32	0.89	NA
Ohio	95,300	111,160	116,200	5,502,533	5,626,086	5,303,019	1.73	1.98	2.19
Oklahoma	22,290[a]	27,600	21,320	1,605,641	1,665,819	1,630,925	1.39	1.66	1.31
Oregon	33,630	34,980	35,700	1,714,447	1,822,010	1,769,599	1.96	1.92	2.02
Pennsylvania	101,230	115,300	116,600	5,859,561	6,054,254	5,791,061	1.73	1.90	2.01
Rhode Island	9,710[a]	9,940	10,280	526,046	545,252	509,073	1.85	1.82	2.02
South Carolina	20,670	25,130	25,610	1,888,050	2,000,185	1,922,815	1.09	1.26	1.33
South Dakota	5,000	5,860	5,570	411,708	428,850	422,562	1.21	1.37	1.32
Tennessee	36,670	38,490	38,200	2,746,241	2,874,173	2,759,243	1.34	1.34	1.38
Texas	204,490	245,730	255,470	10,385,318	10,925,311	11,141,903	1.97	2.25	2.29
Utah	26,830	30,750	31,090	1,179,142	1,319,933	1,262,083	2.28	2.33	2.46
Vermont	6,190	5,610	6,340	334,188	341,588	338,295	1.85	1.64	1.87
Virginia	159,070	171,440	175,640	3,715,272	3,926,052	3,896,167	4.28	4.37	4.51
Washington	85,430	101,030	105,860	2,999,526	3,235,735	3,192,117	2.85	3.12	3.32
West Virginia	6,650	6,900	8,140	746,854	780,869	711,068	0.89	0.88	1.14
Wisconsin	45,730	42,860	55,740	2,868,376	2,951,001	2,807,301	1.59	1.45	1.99
Wyoming	1,740	1,980	2,160	262,358	283,543	273,313	0.66	0.70	0.79
Puerto Rico	7,840	NA	8,960	1,226,251	1,241,426	1,088,762	0.64	NA	0.82

NA = not available

EPSCoR = Experimental Program to Stimulate Competitive Research

[a]Value may be underreported because one or more codes for computer occupations suppressed by state or Bureau of Labor Statistics and not reported at state level.

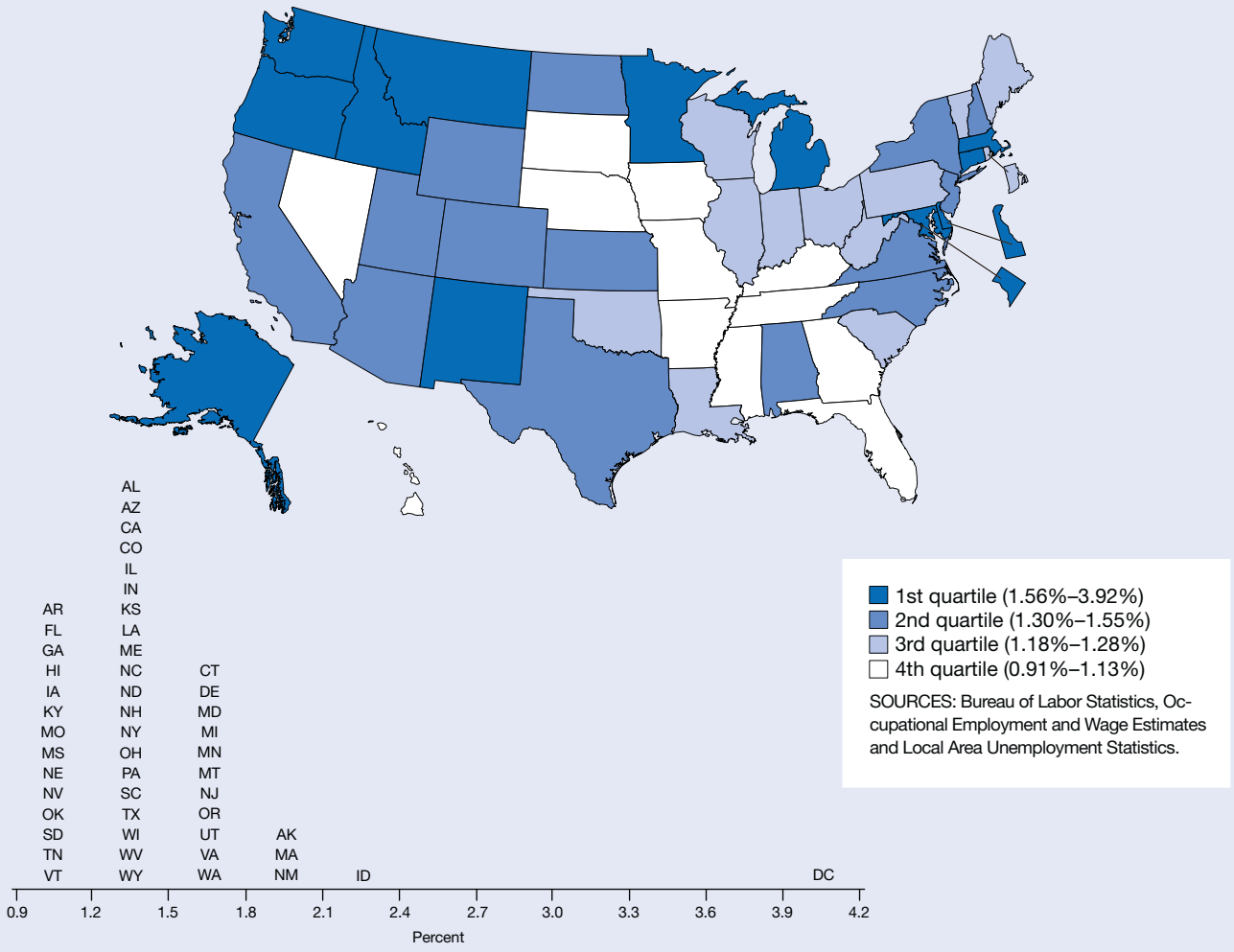
NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates and Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Technical Workers as a Percentage of the Workforce

Figure 8-38
Technical workers as a percentage of the workforce: 2010



Findings

- Every state's workforce increased in the use of technical workers in the 6 years from 2004 to 2010. The number of technical workers exceeded the number of doctorate holders, engineers, or life and physical scientists in the workforce during this period.
- Nearly 1.9 million individuals (1.35% of the U.S. workforce) were employed as technical workers in 2010, an increase from the 1.5 million technical workers employed in 2004, which accounted for 1.11% of the workforce.
- Individual states showed large differences in the percentage of technical workers in their workforce, with 0.91% to 2.16% of their workforce employed as technical workers in 2010.
- EPSCoR states tended to have smaller percentages of technical workers in their workforces and accounted in total for nearly 15% of technical workers nationally.

Technical workers include managers in the areas of computer and information science, engineering, or the natural sciences; computer programmers; drafters working in architecture, civil engineering, electronics, or mechanical engineering; and technicians in a wide variety of technical fields. Individuals who work as scientists and engineers are not included in this indicator.

Data on workers' occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies and do not include self-employed persons. Data on the size of the state workforce are BLS estimates and represent the employed component of the civilian labor force.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-38
Technical workers as a percentage of the workforce, by state: 2004, 2007, and 2010

State	Technical workers			Employed workforce			Technical workers in workforce (%)		
	2004	2007	2010	2004	2007	2010	2004	2007	2010
EPSCoR states	229,470	295,910	281,200	22,441,400	23,358,559	22,453,679	1.02	1.27	1.25
Non-EPSCoR states	1,299,140	1,747,710	1,583,300	116,032,794	121,486,928	116,139,024	1.12	1.44	1.36
Average EPSCoR state value	na	na	na	na	na	na	1.05	1.33	1.33
Average non-EPSCoR state value	na	na	na	na	na	na	1.14	1.47	1.38
United States	1,535,310	2,054,980	1,876,290	138,762,591	145,156,139	138,893,366	1.11	1.42	1.35
Alabama	22,380	26,170	25,250	2,007,153	2,108,873	1,925,064	1.12	1.24	1.31
Alaska	5,120	6,830	6,900	314,753	329,431	332,403	1.63	2.07	2.08
Arizona	29,030	45,980	37,680	2,650,277	2,903,992	2,859,967	1.10	1.58	1.32
Arkansas	10,090	13,340	11,910	1,221,553	1,293,947	1,246,647	0.83	1.03	0.96
California	171,510	251,380	231,630	16,354,779	16,970,228	15,916,288	1.05	1.48	1.46
Colorado	28,880	39,050	33,070	2,392,952	2,598,433	2,447,712	1.21	1.50	1.35
Connecticut	20,710	30,060	29,140	1,703,865	1,761,588	1,724,024	1.22	1.71	1.69
Delaware	4,560	8,550	6,750	408,266	425,289	389,583	1.12	2.01	1.73
District of Columbia	6,700	11,360	11,790	288,397	310,652	300,663	2.32	3.66	3.92
Florida	84,970	97,980	80,170	7,998,202	8,704,110	8,159,147	1.06	1.13	0.98
Georgia	38,580	51,420	44,830	4,249,007	4,561,967	4,213,719	0.91	1.13	1.06
Hawaii	4,930	7,260	6,450	598,175	617,891	587,407	0.82	1.17	1.10
Idaho	7,920	12,880	14,880	666,080	731,362	687,321	1.19	1.76	2.16
Illinois	59,850	78,540	74,590	5,968,561	6,323,515	5,964,868	1.00	1.24	1.25
Indiana	30,990	36,080	33,810	2,997,800	3,081,177	2,822,693	1.03	1.17	1.20
Iowa	12,360	18,850	17,650	1,534,991	1,601,547	1,568,012	0.81	1.18	1.13
Kansas	13,610	18,420	18,090	1,381,343	1,415,942	1,396,558	0.99	1.30	1.30
Kentucky	16,410	18,510	17,990	1,854,703	1,915,131	1,865,961	0.88	0.97	0.96
Louisiana	19,700	24,710	23,730	1,928,464	1,941,642	1,926,492	1.02	1.27	1.23
Maine	6,770	8,200	7,910	653,847	666,305	641,978	1.04	1.23	1.23
Maryland	34,990	47,100	45,900	2,761,583	2,909,290	2,758,219	1.27	1.62	1.66
Massachusetts	42,360	63,400	61,110	3,203,810	3,280,932	3,197,210	1.32	1.93	1.91
Michigan	65,160	73,500	65,340	4,686,953	4,680,780	4,192,819	1.39	1.57	1.56
Minnesota	33,930	47,250	44,080	2,752,403	2,775,587	2,746,492	1.23	1.70	1.60
Mississippi	9,370	13,620	10,920	1,232,139	1,210,732	1,176,340	0.76	1.12	0.93
Missouri	27,980	34,560	30,930	2,815,878	2,899,695	2,725,527	0.99	1.19	1.13
Montana	5,740	8,100	8,120	456,385	485,132	461,337	1.26	1.67	1.76
Nebraska	9,560	11,260	10,500	938,105	953,057	931,414	1.02	1.18	1.13
Nevada	10,240	12,980	11,300	1,128,223	1,247,491	1,149,537	0.91	1.04	0.98
New Hampshire	7,290	9,760	10,010	687,855	715,310	698,859	1.06	1.36	1.43
New Jersey	52,180	67,710	63,350	4,144,223	4,265,294	4,076,713	1.26	1.59	1.55
New Mexico	12,930	16,540	15,750	849,970	901,704	873,112	1.52	1.83	1.80
New York	85,140	121,560	115,390	8,816,013	9,112,899	8,806,778	0.97	1.33	1.31
North Carolina	43,300	62,140	52,580	4,031,081	4,321,339	4,036,343	1.07	1.44	1.30
North Dakota	3,440	4,130	5,050	339,541	353,214	355,615	1.01	1.17	1.42
Ohio	56,900	68,930	63,510	5,502,533	5,626,086	5,303,019	1.03	1.23	1.20
Oklahoma	15,580	20,250	19,350	1,605,641	1,665,819	1,630,925	0.97	1.22	1.19
Oregon	21,840	31,980	27,770	1,714,447	1,822,010	1,769,599	1.27	1.76	1.57
Pennsylvania	62,880	81,430	70,910	5,859,561	6,054,254	5,791,061	1.07	1.35	1.22
Rhode Island	4,990	6,920	5,990	526,046	545,252	509,073	0.95	1.27	1.18
South Carolina	21,130	26,970	23,860	1,888,050	2,000,185	1,922,815	1.12	1.35	1.24
South Dakota	3,380	3,790	3,860	411,708	428,850	422,562	0.82	0.88	0.91
Tennessee	27,650	32,890	28,440	2,746,241	2,874,173	2,759,243	1.01	1.14	1.03
Texas	132,850	181,730	162,150	10,385,318	10,925,311	11,141,903	1.28	1.66	1.46
Utah	16,360	23,090	19,470	1,179,142	1,319,933	1,262,083	1.39	1.75	1.54
Vermont	3,800	4,350	4,030	334,188	341,588	338,295	1.14	1.27	1.19
Virginia	48,320	64,330	59,520	3,715,272	3,926,052	3,896,167	1.30	1.64	1.53
Washington	40,390	55,080	54,330	2,999,526	3,235,735	3,192,117	1.35	1.70	1.70
West Virginia	7,870	8,500	8,550	746,854	780,869	711,068	1.05	1.09	1.20
Wisconsin	30,030	41,690	35,950	2,868,376	2,951,001	2,807,301	1.05	1.41	1.28
Wyoming	2,660	3,870	4,050	262,358	283,543	273,313	1.01	1.36	1.48
Puerto Rico	9,680	NA	10,400	1,226,251	1,241,426	1,088,762	0.79	NA	0.96

na = not applicable; NA = not available

EPSCoR = Experimental Program to Stimulate Competitive Research

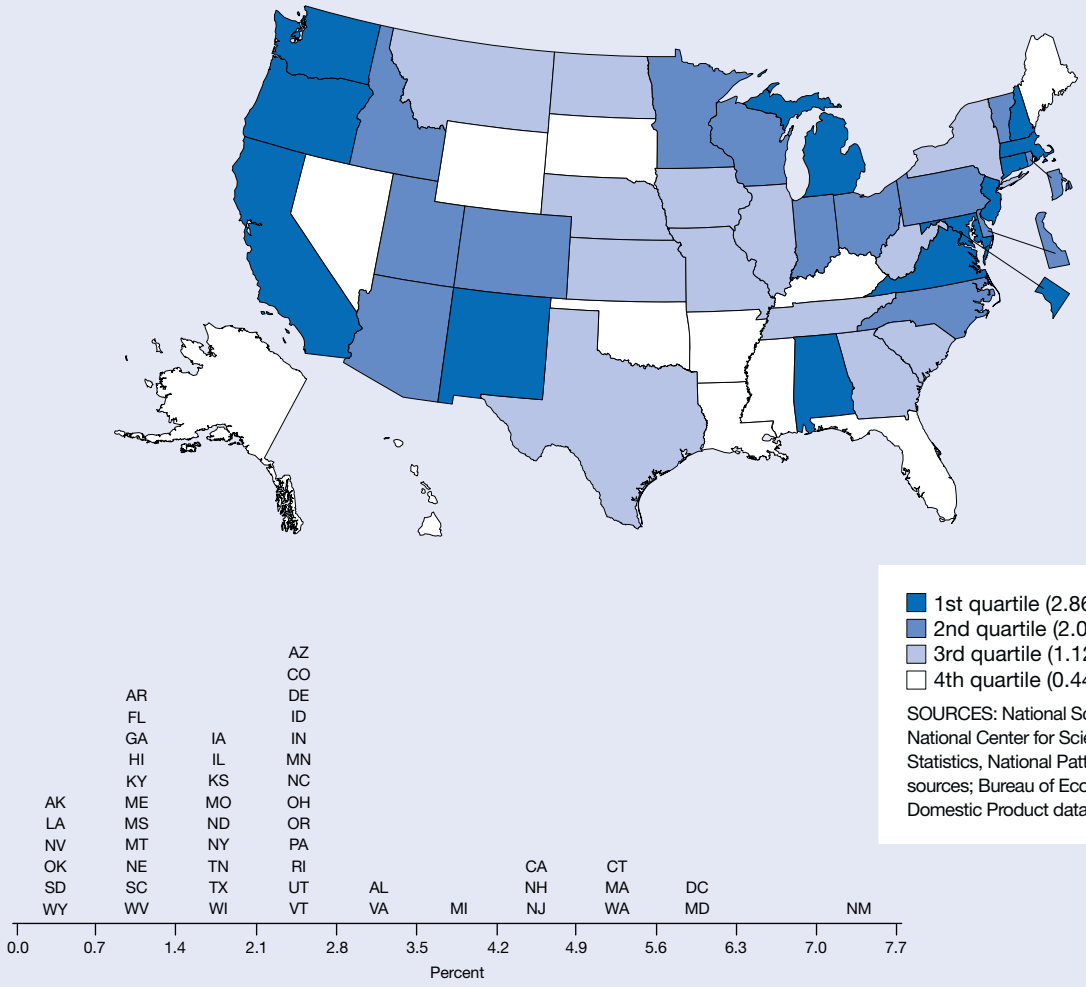
NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCE: Bureau of Labor Statistics, Occupational Employment and Wage Estimates and Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

R&D as a Percentage of Gross Domestic Product

Figure 8-39
R&D as a percentage of gross domestic product: 2008



Findings

- The national value of R&D performed as a share of gross domestic product (GDP) rose slightly between 2000 and 2008, from 2.48% to 2.61%.
- In 2008, state values for this indicator ranged from 0.40% to 7.65%, indicating large differences in the geographic concentration of R&D activity.
- New Mexico has large federal R&D activities and a relatively small GDP giving it the highest value for this indicator.
- States with high rankings on this indicator also tended to rank high on S&E doctorate holders as a share of the workforce.
- The total R&D performed in states in the EPSCoR group was approximately one-tenth of that performed in states in the non-EPSCoR group.

This indicator represents the extent to which R&D plays a role in a state's economy. A high value indicates that a state has a high intensity of R&D activity, which may support future growth in knowledge-based industries. Industries that have a high percentage of R&D activity include pharmaceuticals, chemicals, computer equipment and services, electronic components, aerospace, and motor vehicles.

R&D performed refers to R&D activities conducted or funded by federal and state agencies, businesses, universities, and nonprofit organizations. In 2009, business performed nearly three-quarters of the total R&D at the national level followed by colleges and universities at 13%; followed by government facilities, including federally funded R&D centers, and nonprofit institutions.

Both gross domestic product (GDP) and R&D performance are shown in current dollars.

The methodology for assigning industry R&D activity at the state level was modified in 2001, and 1998–2000 data were recalculated using the new methodology.

Table 8-39
R&D as a percentage of gross domestic product, by state: 2000, 2004, and 2008

State	R&D performed ($millions)			State GDP ($millions)			R&D performed/GDP (%)		
	2000	2004	2008	2000	2004	2008	2000	2004	2008
EPSCoR states	18,730	25,969	32,822	1,368,845	1,684,709	2,079,663	1.37	1.54	1.58
Non-EPSCoR states	223,829	255,087	333,891	8,457,057	10,026,090	12,093,434	2.65	2.54	2.76
Average EPSCoR state value	na	na	na	na	na	na	1.55	1.71	1.71
Average non-EPSCoR state value	na	na	na	na	na	na	2.47	2.56	2.79
United States	244,855	283,439	372,660	9,884,171	11,788,910	14,270,458	2.48	2.40	2.61
Alabama	1,730	2,760	4,870	116,014	142,086	169,694	1.49	1.94	2.87
Alaska	196	271	269	25,913	34,408	49,186	0.76	0.79	0.55
Arizona	3,107	3,544	7,010	161,901	201,287	260,454	1.92	1.76	2.69
Arkansas	454	514	747	68,146	83,551	99,497	0.67	0.62	0.75
California	55,093	59,607	81,323	1,317,343	1,571,198	1,911,741	4.18	3.79	4.25
Colorado	4,230	5,497	5,810	171,930	201,656	254,218	2.46	2.73	2.29
Connecticut	4,888	7,881	11,322	163,943	188,576	225,958	2.98	4.18	5.01
Delaware	1,532	1,182	1,594	40,957	51,282	58,674	3.74	2.30	2.72
District of Columbia	2,296	2,383	5,946	58,269	78,111	97,361	3.94	3.05	6.11
Florida	4,663	5,409	6,515	481,115	621,251	747,770	0.97	0.87	0.87
Georgia	2,796	3,655	5,232	294,479	343,158	405,269	0.95	1.07	1.29
Hawaii	291	490	663	41,372	52,185	66,119	0.70	0.94	1.00
Idaho	1,434	1,006	1,375	36,091	44,050	55,212	3.97	2.28	2.49
Illinois	12,767	11,300	11,961	474,444	546,661	637,037	2.69	2.07	1.88
Indiana	3,252	5,130	6,111	198,020	231,961	263,616	1.64	2.21	2.32
Iowa	1,017	1,625	2,136	93,287	115,993	134,959	1.09	1.40	1.58
Kansas	1,420	2,169	2,029	85,742	99,974	125,333	1.66	2.17	1.62
Kentucky	866	1,006	1,463	113,108	131,655	155,592	0.77	0.76	0.94
Louisiana	627	972	1,193	131,430	171,848	213,441	0.48	0.57	0.56
Maine	319	384	516	36,395	44,342	49,972	0.88	0.87	1.03
Maryland	8,634	14,341	16,605	182,953	232,215	281,659	4.72	6.18	5.90
Massachusetts	13,004	15,987	20,090	272,680	310,476	365,623	4.77	5.15	5.49
Michigan	18,892	16,722	15,507	336,786	365,189	375,436	5.61	4.58	4.13
Minnesota	4,299	5,992	6,697	188,449	227,321	262,758	2.28	2.64	2.55
Mississippi	513	651	808	65,615	77,617	96,713	0.78	0.84	0.84
Missouri	2,583	3,038	3,884	180,982	208,763	241,344	1.43	1.46	1.61
Montana	170	295	401	21,629	27,863	35,838	0.79	1.06	1.12
Nebraska	439	740	988	57,233	69,615	84,884	0.77	1.06	1.16
Nevada	377	623	913	75,907	100,677	132,270	0.50	0.62	0.69
New Hampshire	775	1,665	2,496	44,067	51,293	58,780	1.76	3.25	4.25
New Jersey	13,133	12,460	20,713	349,334	410,176	483,560	3.76	3.04	4.28
New Mexico	3,085	5,114	5,906	50,262	64,208	77,168	6.14	7.97	7.65
New York	13,556	13,113	16,486	770,621	893,399	1,109,080	1.76	1.47	1.49
North Carolina	5,045	6,491	8,612	281,418	327,547	403,927	1.79	1.98	2.13
North Dakota	146	558	511	18,250	23,335	31,677	0.80	2.39	1.61
Ohio	7,662	7,816	10,164	381,175	428,974	470,640	2.01	1.82	2.16
Oklahoma	660	814	1,030	91,292	112,444	151,850	0.72	0.72	0.68
Oregon	2,116	3,664	4,802	112,974	137,341	174,454	1.87	2.67	2.75
Pennsylvania	9,842	10,813	13,068	395,811	462,280	545,198	2.49	2.34	2.40
Rhode Island	1,501	1,840	1,233	33,522	42,933	47,378	4.48	4.29	2.60
South Carolina	1,126	1,599	2,086	115,392	134,765	159,500	0.98	1.19	1.31
South Dakota	85	149	254	24,009	30,588	38,293	0.35	0.49	0.66
Tennessee	2,057	3,180	3,871	177,582	213,888	247,796	1.16	1.49	1.56
Texas	11,552	14,266	20,316	732,987	906,893	1,202,104	1.58	1.57	1.69
Utah	1,361	1,602	2,522	69,483	82,616	112,353	1.96	1.94	2.24
Vermont	465	546	546	18,033	21,909	24,636	2.58	2.49	2.22
Virginia	5,069	7,345	11,472	261,894	329,927	402,853	1.94	2.23	2.85
Washington	10,516	10,936	16,696	227,828	258,069	334,477	4.62	4.24	4.99
West Virginia	457	523	778	41,419	48,785	59,039	1.10	1.07	1.32
Wisconsin	2,693	3,675	4,967	177,638	209,275	239,150	1.52	1.76	2.08
Wyoming	61	98	154	17,047	23,296	38,917	0.36	0.42	0.40
Puerto Rico	NA	NA	NA	69,208	82,809	95,708	NA	NA	NA

na = not applicable; NA = not available

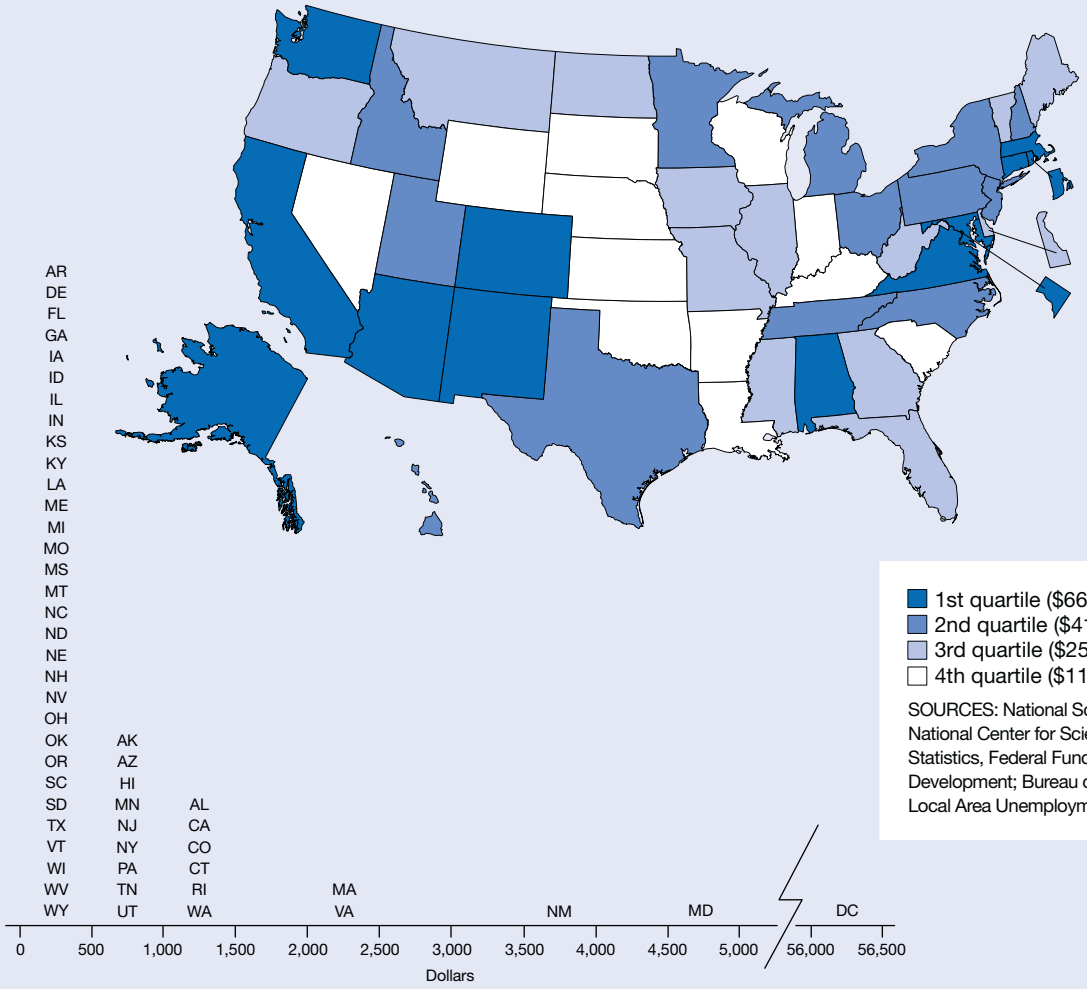
EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

NOTES: R&D includes R&D performed by federal agencies, business, universities, other nonprofit organizations, and state agencies. R&D and GDP reported in current dollars. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (various years); Bureau of Economic Analysis, Gross Domestic Product data; United Nations Statistics Division.

Federal R&D Obligations per Employed Worker

Figure 8-40
Federal R&D obligations per employed worker: 2008



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development; Bureau of Labor Statistics, Local Area Unemployment Statistics.

Findings

- Federal R&D obligations have increased appreciably from about $74 billion in 2000 to about $125 billion in 2008, an increase of 76% in current dollars.
- In 2008, federal R&D obligations per civilian worker were concentrated in a few states; only 10 states and the District of Columbia exceeded the national average of $862 per worker.
- Federal R&D obligations in 2008 varied greatly among the states, ranging from $112 to $4,591 per civilian worker. Higher values were found in the states surrounding the District of Columbia and in sparsely populated states with national laboratories or federal facilities.

This indicator represents how federal R&D obligations are disbursed geographically relative to the size of a state's employed civilian workforce. Federal R&D dollars are attributed to the states in which the recipients are located.

Federal obligations for R&D come from the National Center for Science and Engineering Statistics and cover data reported by 11 federal agencies. The Department of Defense (DoD) disburses the most federal R&D funding, approximately 50% of the total. The geographic distribution of DoD R&D funding for development to industry reflects the location of prime contractors only, not the subcontractors who perform much of the R&D. A high value may indicate the existence of a number of large prime contractors or major federally funded R&D facilities in a state.

The estimate of a state's workforce is provided by the Bureau of Labor Statistics (BLS). It represents the employed component of the civilian labor force and is not seasonally adjusted. BLS assigns workers to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-40
Federal R&D obligations per employed worker, by state: 2000, 2004, and 2008

State	Federal R&D obligations ($thousands)			Employed workers			Federal R&D obligations/ employed worker ($)		
	2000	2004	2008	2000	2004	2008	2000	2004	2008
United States	74,074,333	109,498,570	124,844,682	136,955,714	138,762,591	144,860,347	541	789	862
Alabama	1,670,058	3,035,516	2,782,193	2,067,147	2,007,153	2,061,601	808	1,512	1,350
Alaska	155,155	461,308	222,163	299,324	314,753	332,389	518	1,466	668
Arizona	1,151,925	2,643,735	2,449,176	2,404,916	2,650,277	2,934,136	479	998	835
Arkansas	116,333	146,682	145,265	1,207,352	1,221,553	1,300,420	96	120	112
California	14,819,382	19,259,424	19,938,653	16,024,341	16,354,779	16,883,425	925	1,178	1,181
Colorado	1,398,887	2,068,038	2,668,121	2,300,192	2,392,952	2,605,535	608	864	1,024
Connecticut	806,228	2,122,540	1,815,401	1,697,670	1,703,865	1,763,911	475	1,246	1,029
Delaware	69,867	89,747	144,314	402,777	408,266	419,184	173	220	344
District of Columbia	2,443,108	3,329,397	17,537,244	291,916	288,397	312,877	8,369	11,544	56,052
Florida	2,286,464	3,265,014	2,290,401	7,569,406	7,998,202	8,621,454	302	408	266
Georgia	2,654,039	1,906,523	1,386,021	4,095,362	4,249,007	4,517,730	648	449	307
Hawaii	234,291	488,209	347,753	584,858	598,175	613,803	401	816	567
Idaho	217,349	288,538	355,408	632,451	666,080	722,714	344	433	492
Illinois	1,496,751	1,880,072	2,168,530	6,176,837	5,968,561	6,247,985	242	315	347
Indiana	512,847	556,743	672,029	3,052,719	2,997,800	3,049,268	168	186	220
Iowa	275,560	538,270	634,853	1,557,081	1,534,991	1,607,923	177	351	395
Kansas	224,013	287,446	300,406	1,351,988	1,381,343	1,421,107	166	208	211
Kentucky	253,526	251,763	252,464	1,866,348	1,854,703	1,898,083	136	136	133
Louisiana	249,045	446,722	406,131	1,930,662	1,928,464	1,974,881	129	232	206
Maine	249,812	210,258	168,009	650,385	653,847	665,057	384	322	253
Maryland	8,778,541	12,608,595	13,312,685	2,711,382	2,761,583	2,900,018	3,238	4,566	4,591
Massachusetts	4,552,289	5,963,595	6,883,096	3,273,281	3,203,810	3,283,147	1,391	1,861	2,096
Michigan	1,005,043	1,117,762	1,866,491	4,953,421	4,686,953	4,554,464	203	238	410
Minnesota	797,334	831,259	1,393,037	2,720,492	2,752,403	2,778,500	293	302	501
Mississippi	413,820	1,598,715	435,207	1,239,859	1,232,139	1,205,464	334	1,298	361
Missouri	905,875	3,058,821	1,111,285	2,875,336	2,815,878	2,869,569	315	1,086	387
Montana	105,359	188,774	159,461	446,552	456,385	485,375	236	414	329
Nebraska	104,079	210,458	204,579	923,198	938,105	960,438	113	224	213
Nevada	273,344	554,983	312,624	1,015,221	1,128,223	1,246,696	269	492	251
New Hampshire	357,828	422,144	294,312	675,541	687,855	716,611	530	614	411
New Jersey	1,979,346	2,273,723	2,192,726	4,130,310	4,144,223	4,256,251	479	549	515
New Mexico	2,210,494	3,363,175	3,502,888	810,024	849,970	909,809	2,729	3,957	3,850
New York	2,989,719	4,505,321	4,651,187	8,751,441	8,816,013	9,138,034	342	511	509
North Carolina	1,062,536	1,683,581	1,772,567	3,969,235	4,031,081	4,291,565	268	418	413
North Dakota	64,051	108,573	98,326	335,780	339,541	355,622	191	320	276
Ohio	2,164,645	2,794,181	2,580,353	5,573,154	5,502,533	5,570,514	388	508	463
Oklahoma	232,217	498,478	260,753	1,609,522	1,605,641	1,674,485	144	310	156
Oregon	468,167	504,810	581,074	1,716,954	1,714,447	1,828,477	273	294	318
Pennsylvania	2,396,146	3,731,084	3,279,378	5,830,902	5,859,561	6,095,678	411	637	538
Rhode Island	418,037	642,064	643,721	520,758	526,046	528,288	803	1,221	1,219
South Carolina	249,938	384,307	453,003	1,917,365	1,888,050	1,998,171	130	204	227
South Dakota	38,803	70,036	76,379	397,678	411,708	432,130	98	170	177
Tennessee	824,300	1,381,987	1,689,925	2,756,498	2,746,241	2,854,488	299	503	592
Texas	3,021,013	5,506,721	5,029,588	9,896,002	10,385,318	11,070,779	305	530	454
Utah	305,980	1,183,694	699,928	1,097,915	1,179,142	1,324,467	279	1,004	528
Vermont	72,030	417,091	120,985	326,742	334,188	342,130	220	1,248	354
Virginia	4,961,535	7,298,269	9,282,197	3,502,524	3,715,272	3,954,733	1,417	1,964	2,347
Washington	1,345,649	2,311,260	4,339,544	2,898,677	2,999,526	3,286,973	464	771	1,320
West Virginia	235,677	315,693	224,575	764,649	746,854	770,845	308	423	291
Wisconsin	420,839	645,875	660,915	2,894,884	2,868,376	2,936,749	145	225	225
Wyoming	35,059	47,596	47,358	256,685	262,358	286,394	137	181	165
Puerto Rico	81,016	100,904	84,929	1,162,153	1,226,251	1,208,595	70	82	70

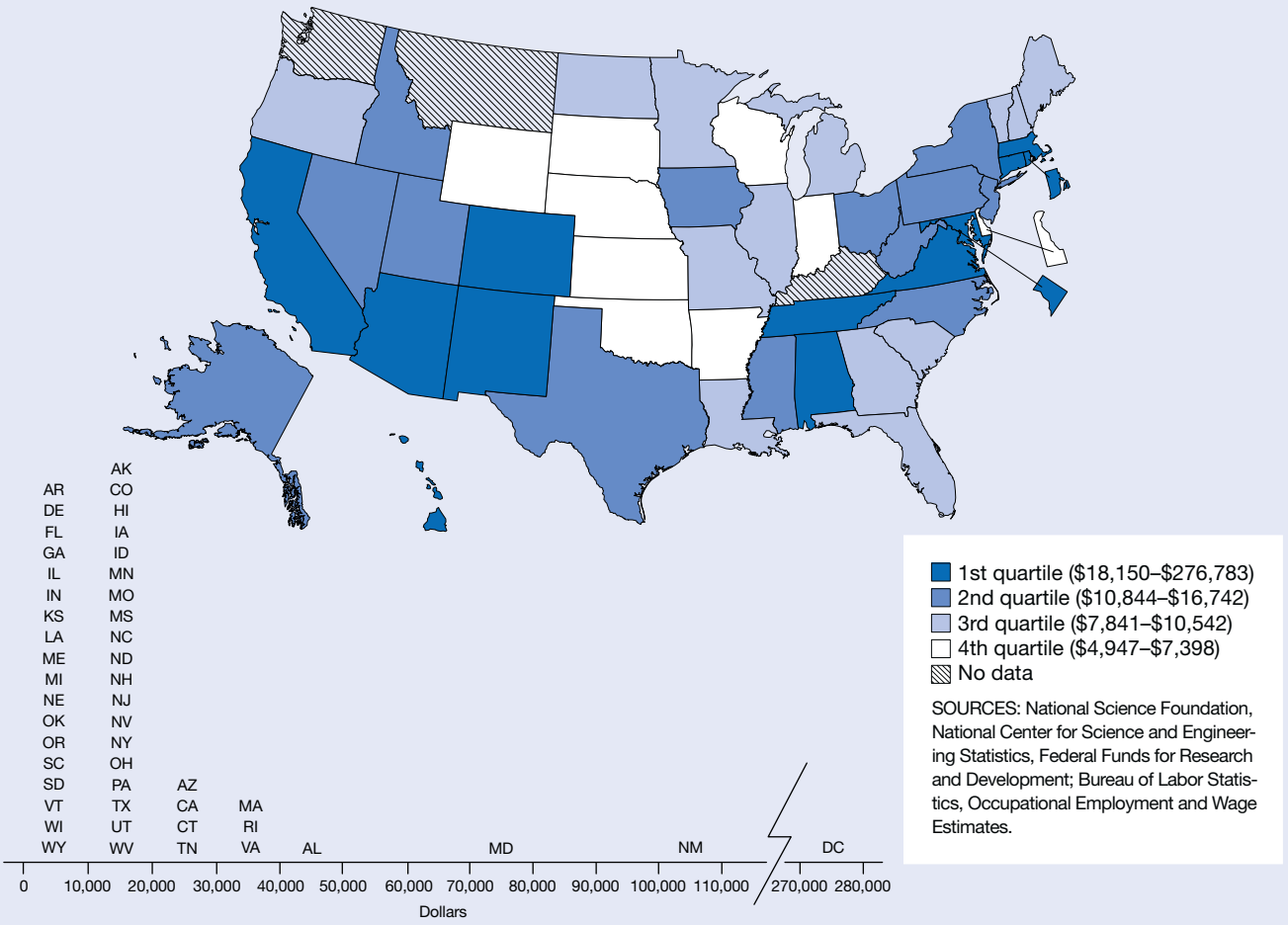
NOTES: Only 11 agencies required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. Civilian workers represent employed component of civilian labor force and reported as annual data not seasonally adjusted. Federal R&D obligations reported in current dollars.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development (various years); Bureau of Labor Statistics, Local Area Unemployment Statistics.

Science and Engineering Indicators 2012

Federal R&D Obligations per Individual in Science and Engineering Occupation

Figure 8-41
Federal R&D obligations per individual in science and engineering occupation: 2008



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development; Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

Findings

- The federal government obligated approximately $125 billion for R&D in 2008—more than $20,000 for each person employed in an S&E occupation.
- Federal R&D obligations per person employed in an S&E occupation ranged across the states from $4,347 to $101,360 in 2008.
- The distribution for this indicator was highly skewed in 2008, with only 10 states and the District of Columbia above the national average. High values were reported in the District of Columbia and adjoining states and also in states where federal facilities or major defense contractors are located.
- The 7 lowest ranking states are EPSCoR states.

This indicator represents the relationship between federal R&D spending in a state and the number of employees in the state who work in S&E occupations. Federal R&D dollars are attributed to the states in which the recipients of federal obligations are located.

Federal obligations for R&D come from the National Center for Science and Engineering Statistics and include data reported by 11 federal agencies. The Department of Defense (DoD) disburses the most funding, approximately 50% of the total. The geographic distribution of DoD R&D funding to industry, mostly for development, reflects the location of prime contractors only, not the numerous subcontractors who perform much of the R&D.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics (BLS) from data provided by state workforce agencies. Due to the way data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Data on people in S&E occupations are sample based.

Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-41
Federal R&D obligations per individual in science and engineering occupation, by state: 2003, 2005, and 2008

State	Federal R&D obligations ($millions)			Individuals in S&E occupations			Federal R&D obligations/individual in S&E occupation ($)		
	2003	2005	2008	2003	2005	2008	2003	2005	2008
United States	100,982	116,331	124,842	4,961,550	5,233,520	5,781,460	20,353	22,228	21,594
Alabama	3,212	3,108	2,782	56,380	62,790	68,580	56,971	49,498	40,566
Alaska	399	495	222	10,600	11,230	13,260	37,642	44,078	16,742
Arizona	2,385	2,959	2,449	92,120	96,410	102,100	25,890	30,692	23,986
Arkansas	145	165	145	21,340	24,660	29,310	6,795	6,691	4,947
California	20,170	19,964	19,939	676,180	716,530	791,750	29,829	27,862	25,183
Colorado	1,735	2,265	2,668	124,140	126,110	147,000	13,976	17,961	18,150
Connecticut	2,068	2,400	1,815	81,380	83,930	80,290	25,412	28,595	22,606
Delaware	95	94	144	17,370	18,010	22,330	5,469	5,219	6,449
District of Columbia	2,986	4,162	17,537	54,890	63,410	63,360	54,400	65,636	276,783
Florida	2,854	2,590	2,290	221,070	241,000	248,200	12,910	10,747	9,226
Georgia	2,133	2,182	1,386	144,170	137,580	147,380	14,795	15,860	9,404
Hawaii	414	600	348	16,090	17,460	18,830	25,730	34,364	18,481
Idaho	218	290	355	22,150	23,880	23,310	9,842	12,144	15,230
Illinois	1,935	2,128	2,169	211,230	221,630	224,370	9,161	9,602	9,667
Indiana	574	567	672	78,410	79,910	90,840	7,320	7,095	7,398
Iowa	500	488	635	37,320	40,300	46,180	13,398	12,109	13,751
Kansas	269	358	300	51,970	51,630	54,260	5,176	6,934	5,529
Kentucky	247	296	252	45,230	44,530	NA	5,461	6,647	NA
Louisiana	453	444	406	41,900	41,030	41,790	10,811	10,821	9,715
Maine	167	292	168	15,020	15,500	17,000	11,119	18,839	9,882
Maryland	8,027	12,501	13,313	149,250	160,120	167,070	53,782	78,073	79,685
Massachusetts	5,492	6,592	6,883	184,690	193,180	217,310	29,736	34,124	31,674
Michigan	1,693	1,177	1,866	182,940	192,150	204,290	9,254	6,125	9,134
Minnesota	866	768	1,393	117,120	120,930	134,440	7,394	6,351	10,361
Mississippi	1,181	438	435	22,190	23,480	27,270	53,222	18,654	15,952
Missouri	1,350	4,202	1,111	84,150	92,260	105,390	16,043	45,545	10,542
Montana	131	182	159	11,450	11,940	NA	11,441	15,243	NA
Nebraska	168	193	205	30,710	31,530	31,820	5,471	6,121	6,442
Nevada	419	593	313	22,330	24,400	27,300	18,764	24,303	11,465
New Hampshire	512	514	294	23,430	26,840	29,150	21,852	19,151	10,086
New Jersey	2,088	2,525	2,193	161,420	174,270	198,060	12,935	14,489	11,072
New Mexico	3,090	3,593	3,503	33,600	32,530	34,560	91,964	110,452	101,360
New York	4,383	5,320	4,651	272,440	289,010	326,510	16,088	18,408	14,245
North Carolina	1,617	1,806	1,773	132,440	134,290	153,680	12,209	13,449	11,537
North Dakota	107	118	98	8,430	9,070	9,450	12,693	13,010	10,370
Ohio	2,967	2,962	2,580	177,100	180,900	206,320	16,753	16,374	12,505
Oklahoma	570	401	261	44,360	46,370	48,900	12,849	8,648	5,337
Oregon	514	650	581	61,230	62,030	70,070	8,395	10,479	8,292
Pennsylvania	3,989	3,677	3,279	185,560	204,270	227,170	21,497	18,001	14,434
Rhode Island	566	889	644	18,740	18,080	18,090	30,203	49,170	35,600
South Carolina	454	493	453	48,740	50,460	57,770	9,315	9,770	7,841
South Dakota	55	70	76	9,150	9,460	11,870	6,011	7,400	6,403
Tennessee	1,131	1,426	1,690	63,680	66,390	72,760	17,761	21,479	23,227
Texas	5,414	5,187	5,030	365,270	389,550	463,850	14,822	13,315	10,844
Utah	803	1,058	700	45,570	45,110	52,570	17,621	23,454	13,316
Vermont	201	263	121	11,420	12,770	12,360	17,601	20,595	9,790
Virginia	6,709	8,747	9,282	209,280	236,650	259,280	32,058	36,962	35,799
Washington	2,442	2,641	4,340	150,230	160,960	NA	16,255	16,408	NA
West Virginia	383	808	225	16,220	16,040	17,000	23,613	50,374	13,235
Wisconsin	658	652	661	93,320	93,590	101,680	7,051	6,967	6,501
Wyoming	43	38	47	6,130	7,350	8,850	7,015	5,170	5,311
Puerto Rico	112	101	85	19,940	20,950	22,970	5,617	4,821	3,700

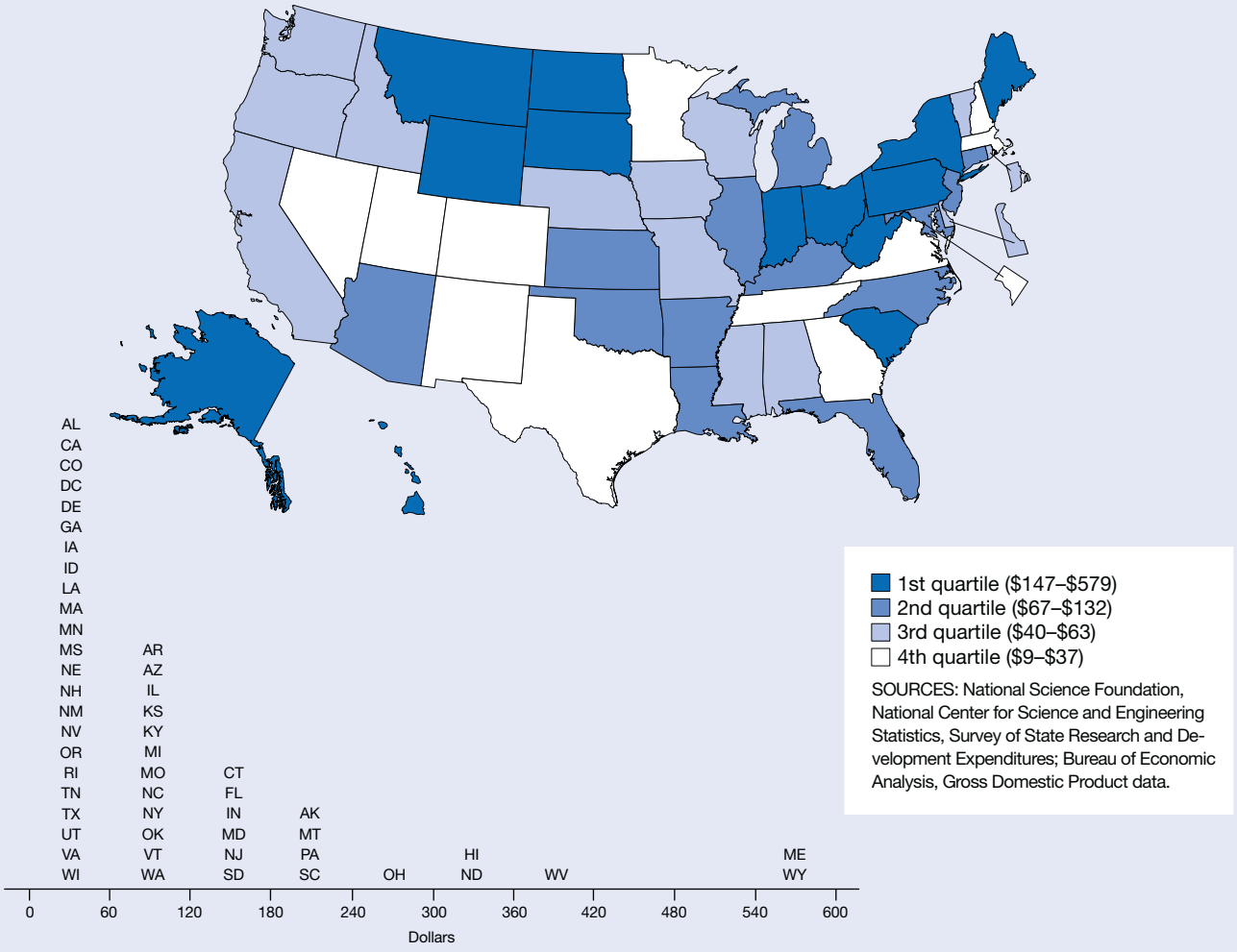
NA = not available

NOTES: Only 11 agencies required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. Federal R&D obligations reported in current dollars. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES). OES estimates for 2003 S&E occupations based upon November data; estimates for remaining years based upon May data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Federal Funds for Research and Development (various years); Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

State Agency R&D Expenditures per $1 Million of Gross Domestic Product

Figure 8-42
State agency R&D expenditures per $1 million of gross domestic product: 2007



Findings

- Nationally, state government agencies spent a total of $1.2 billion on R&D in 2007. This represented $88 for each $1 million of a state's gross domestic product (GDP).
- State agency R&D expenditures accounted for less than one-half of 1 percent of total R&D expenditures in 2007; most R&D was funded by nonstate sources.
- In 2007, the state values for this indicator ranged from $9 to $579 per $1 million of state GDP.
- Nine EPSCoR states are among those with the highest values for this indicator, suggesting that there is a state-level effort to improve R&D infrastructure in these states, not just a federal effort.
- State R&D totals display considerable volatility between FY 2006 and FY 2007. Four states (Florida, Indiana, New Jersey, and Rhode Island) included new agencies in their reporting from 2006 to 2007.

This indicator represents the ratio of state agency R&D funding to the size of a state's economy. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D funding cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include some expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

Because of differences in the survey populations, definition of covered R&D activities, and collection methods, the results of previous NSF surveys on state government R&D are not comparable. Data for the value of gross domestic product (GDP) and for R&D expenditures are shown in current dollars.

Table 8-42
State agency R&D expenditures per $1 million of gross domestic product, by state: 2006 and 2007

State	State agency R&D expenditures ($)		State GDP ($millions)		State agency R&D ($)/ $1 million GDP	
	2006	2007	2006	2007	2006	2007
EPSCoR states	195,833,394	232,177,940	1,917,410	2,014,616	102	115
Non-EPSCoR states	824,010,424	989,262,653	11,306,386	11,862,368	73	83
Average EPSCoR state value	na	na	na	na	140	157
Average non-EPSCoR state value	na	na	na	na	94	107
United States	1,021,016,894	1,223,449,593	13,310,942	13,969,326	77	88
Alabama	7,269,319	7,340,365	159,263	165,981	46	44
Alaska	10,019,060	9,526,100	41,820	44,587	240	214
Arizona	37,151,471	20,442,635	246,837	260,122	151	79
Arkansas	4,869,648	7,658,199	93,518	97,187	52	79
California	107,793,045	91,842,652	1,800,779	1,874,783	60	49
Colorado	8,997,236	11,924,981	230,206	242,900	39	49
Connecticut	19,209,064	29,285,710	210,278	222,498	91	132
Delaware	2,812,102	2,611,108	56,660	60,108	50	43
District of Columbia	1,173,076	2,009,000	87,146	92,342	13	22
Florida	42,329,624	96,968,573	730,191	759,572	58	128
Georgia	10,620,188	4,886,946	381,500	400,331	28	12
Hawaii	12,067,849	22,643,330	61,194	64,212	197	353
Idaho	2,280,873	2,739,006	50,526	54,344	45	50
Illinois	37,184,281	41,974,809	602,147	629,379	62	67
Indiana	6,220,575	40,534,381	249,209	262,596	25	154
Iowa	13,564,062	6,790,053	124,319	134,410	109	51
Kansas	14,348,384	11,752,696	112,207	121,268	128	97
Kentucky	17,558,997	11,960,634	147,177	151,506	119	79
Louisiana	11,216,568	6,587,314	204,861	205,758	55	32
Maine	17,509,051	27,525,552	47,688	49,195	367	560
Maryland	24,945,119	40,298,691	261,076	273,693	96	147
Massachusetts	10,729,419	5,600,189	337,723	353,329	32	16
Michigan	75,016,589	32,849,159	376,610	387,086	199	85
Minnesota	6,219,201	10,529,048	246,012	254,567	25	41
Mississippi	2,744,882	2,893,892	86,089	93,194	32	31
Missouri	18,465,303	15,567,277	223,716	233,008	83	67
Montana	8,606,319	8,200,230	32,256	35,100	267	234
Nebraska	5,602,163	4,043,480	76,547	82,185	73	49
Nevada	1,397,463	1,748,776	124,191	133,782	11	13
New Hampshire	2,040,544	1,685,178	56,071	57,856	36	29
New Jersey	25,900,482	59,747,701	454,978	472,000	57	127
New Mexico	3,105,000	672,921	71,478	74,393	43	9
New York	103,597,135	128,361,166	1,032,879	1,085,225	100	118
North Carolina	14,344,310	37,607,109	379,050	397,975	38	94
North Dakota	21,062,090	9,908,722	26,068	28,552	808	347
Ohio	55,068,629	114,086,509	454,145	468,707	121	243
Oklahoma	8,922,036	10,731,050	131,904	140,183	68	77
Oregon	7,382,722	7,389,914	160,019	167,016	46	44
Pennsylvania	117,320,158	103,973,448	507,275	532,117	231	195
Rhode Island	150,000	1,771,949	46,449	47,334	3	37
South Carolina	22,427,746	31,493,843	149,285	158,041	150	199
South Dakota	5,791,586	5,473,603	32,451	35,082	178	156
Tennessee	5,355,000	4,549,998	236,554	242,678	23	19
Texas	28,019,645	29,650,947	1,055,959	1,147,970	27	26
Utah	3,214,170	2,752,228	100,466	108,815	32	25
Vermont	1,680,533	1,529,805	23,651	24,093	71	63
Virginia	11,579,623	15,486,526	375,090	389,319	31	40
Washington	22,834,218	23,333,431	300,225	325,112	76	72
West Virginia	6,024,577	22,179,830	55,334	57,001	109	389
Wisconsin	10,949,155	12,828,572	229,143	237,160	48	54
Wyoming	6,326,604	19,500,357	30,722	33,674	206	579
Puerto Rico	1,458,790	2,326,241	88,902	93,263	16	25

na = not applicable

EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

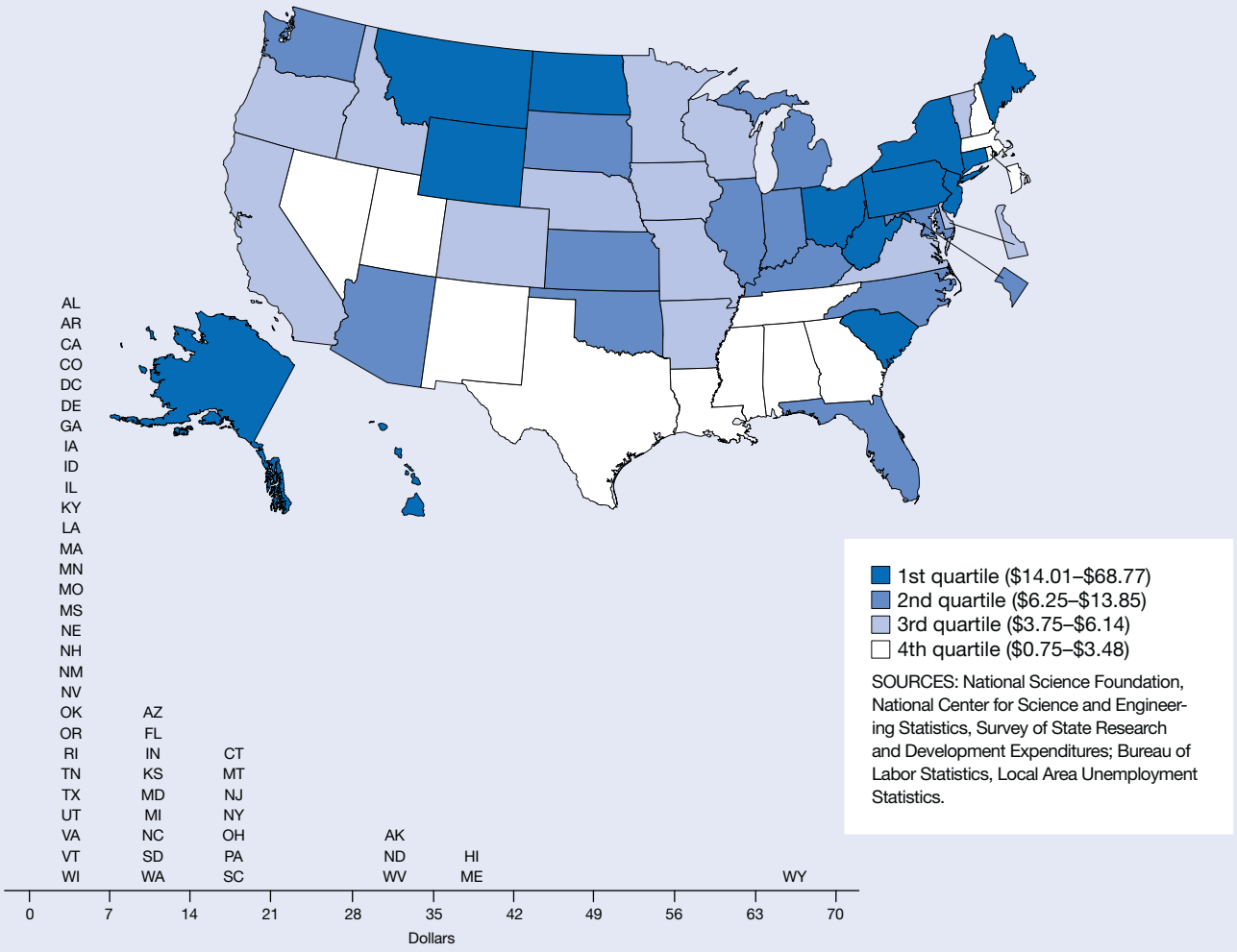
NOTES: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction. R&D and GDP reported in current dollars.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (FY 2006 and FY 2007); Bureau of Economic Analysis, Gross Domestic Product data; United Nations Statistics Division.

Science and Engineering Indicators 2012

State Agency R&D Expenditures per Employed Worker

Figure 8-43
State agency R&D expenditures per employed worker: 2007



SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures; Bureau of Labor Statistics, Local Area Unemployment Statistics.

Findings

- In 2007, state government agency R&D expenditures averaged $8.43 per employed civilian worker nationwide.
- State agency R&D funding per civilian worker across the United States was approximately 1% of the $764 in federal R&D obligations per worker in 2007.
- State agency R&D spending per civilian worker varied greatly among the states in 2007, ranging from a low of $0.75 to a high of $68.77.
- Eight EPSCoR states are among those with the highest values for this indicator.

This indicator represents the extent of R&D activity funded by state government agencies relative to the size of the state's employed civilian workforce. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

Estimates of the size of a state's workforce are provided by the Bureau of Labor Statistics and represent the employed component of the civilian labor force. The data are not seasonally adjusted and workers are assigned to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-43
State agency R&D expenditures per employed worker, by state: 2006 and 2007

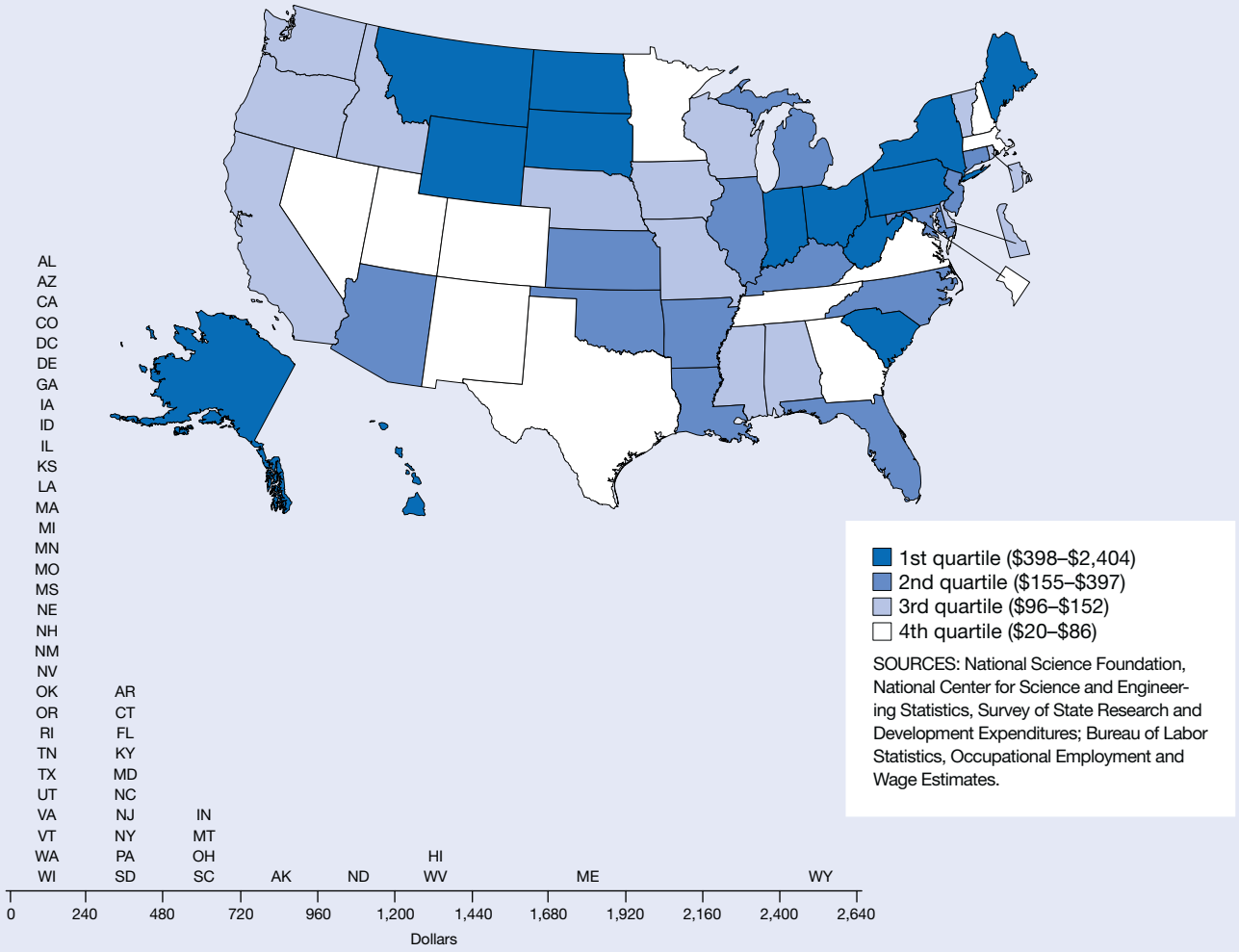
State	State agency R&D expenditures ($)		Employed workers		State agency R&D expenditures/employed worker ($)	
	2006	2007	2006	2007	2006	2007
United States	1,021,016,894	1,223,449,593	143,729,350	145,156,139	7.10	8.43
Alabama	7,269,319	7,340,365	2,098,462	2,108,873	3.46	3.48
Alaska	10,019,060	9,526,100	326,109	329,431	30.72	28.92
Arizona	37,151,471	20,442,635	2,836,638	2,903,992	13.10	7.04
Arkansas	4,869,648	7,658,199	1,286,887	1,293,947	3.78	5.92
California	107,793,045	91,842,652	16,821,266	16,970,228	6.41	5.41
Colorado	8,997,236	11,924,981	2,541,828	2,598,433	3.54	4.59
Connecticut	19,209,064	29,285,710	1,745,993	1,761,588	11.00	16.62
Delaware	2,812,102	2,611,108	424,618	425,289	6.62	6.14
District of Columbia	1,173,076	2,009,000	303,791	310,652	3.86	6.47
Florida	42,329,624	96,968,573	8,584,095	8,704,110	4.93	11.14
Georgia	10,620,188	4,886,946	4,500,150	4,561,967	2.36	1.07
Hawaii	12,067,849	22,643,330	617,807	617,891	19.53	36.65
Idaho	2,280,873	2,739,006	718,077	731,362	3.18	3.75
Illinois	37,184,281	41,974,809	6,225,095	6,323,515	5.97	6.64
Indiana	6,220,575	40,534,381	3,080,047	3,081,177	2.02	13.16
Iowa	13,564,062	6,790,053	1,595,136	1,601,547	8.50	4.24
Kansas	14,348,384	11,752,696	1,403,938	1,415,942	10.22	8.30
Kentucky	17,558,997	11,960,634	1,904,467	1,915,131	9.22	6.25
Louisiana	11,216,568	6,587,314	1,900,240	1,941,642	5.90	3.39
Maine	17,509,051	27,525,552	665,856	666,305	26.30	41.31
Maryland	24,945,119	40,298,691	2,892,733	2,909,290	8.62	13.85
Massachusetts	10,729,419	5,600,189	3,255,504	3,280,932	3.30	1.71
Michigan	75,016,589	32,849,159	4,722,716	4,680,780	15.88	7.02
Minnesota	6,219,201	10,529,048	2,774,524	2,775,587	2.24	3.79
Mississippi	2,744,882	2,893,892	1,199,871	1,210,732	2.29	2.39
Missouri	18,465,303	15,567,277	2,889,461	2,899,695	6.39	5.37
Montana	8,606,319	8,200,230	476,412	485,132	18.06	16.90
Nebraska	5,602,163	4,043,480	943,176	953,057	5.94	4.24
Nevada	1,397,463	1,748,776	1,222,277	1,247,491	1.14	1.40
New Hampshire	2,040,544	1,685,178	708,748	715,310	2.88	2.36
New Jersey	25,900,482	59,747,701	4,257,899	4,265,294	6.08	14.01
New Mexico	3,105,000	672,921	886,708	901,704	3.50	0.75
New York	103,597,135	128,361,166	9,062,464	9,112,899	11.43	14.09
North Carolina	14,344,310	37,607,109	4,261,325	4,321,339	3.37	8.70
North Dakota	21,062,090	9,908,722	349,368	353,214	60.29	28.05
Ohio	55,068,629	114,086,509	5,602,764	5,626,086	9.83	20.28
Oklahoma	8,922,036	10,731,050	1,650,070	1,665,819	5.41	6.44
Oregon	7,382,722	7,389,914	1,792,039	1,822,010	4.12	4.06
Pennsylvania	117,320,158	103,973,448	6,021,084	6,054,254	19.48	17.17
Rhode Island	150,000	1,771,949	543,973	545,252	0.28	3.25
South Carolina	22,427,746	31,493,843	1,970,912	2,000,185	11.38	15.75
South Dakota	5,791,586	5,473,603	421,799	428,850	13.73	12.76
Tennessee	5,355,000	4,549,998	2,852,509	2,874,173	1.88	1.58
Texas	28,019,645	29,650,947	10,757,510	10,925,311	2.60	2.71
Utah	3,214,170	2,752,228	1,285,389	1,319,933	2.50	2.09
Vermont	1,680,533	1,529,805	343,149	341,588	4.90	4.48
Virginia	11,579,623	15,486,526	3,862,508	3,926,052	3.00	3.94
Washington	22,834,218	23,333,431	3,155,384	3,235,735	7.24	7.21
West Virginia	6,024,577	22,179,830	777,210	780,869	7.75	28.40
Wisconsin	10,949,155	12,828,572	2,932,482	2,951,001	3.73	4.35
Wyoming	6,326,604	19,500,357	276,882	283,543	22.85	68.77
Puerto Rico	1,458,790	2,326,241	1,260,703	1,241,426	1.16	1.87

NOTE: R&D expenditures reported in current dollars.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (FY 2006 and FY 2007); Bureau of Labor Statistics, Local Area Unemployment Statistics.

State Agency R&D Expenditures per Individual in Science and Engineering Occupation

Figure 8-44
State agency R&D expenditures per individual in science and engineering occupation: 2007



Findings

- Nationally, state government agencies spent about $1.2 billion for R&D in 2007. By comparison, the federal government obligated more than $111 billion for R&D in 2007.
- In 2007, the average state agency R&D expenditure per person employed in an S&E occupation was $219, compared to about $20,000 the federal government averaged for each person employed in an S&E occupation.
- State agency R&D funding per person employed in an S&E occupation ranged from $20 to $2,404 to per state in 2007.
- Several EPSCoR states had the highest state agency R&D spending per S&E worker.

This indicator represents the ratio of state agency R&D funding to the number of individuals who work in S&E occupations in the state.

Data on state R&D cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Some data may include expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Data on individuals in S&E occupations come from a survey of workplaces and assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics from data provided by state workforce agencies. Because of the way data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Data on people in S&E occupations are sample based.

Table 8-44
State agency R&D expenditures per individual in science and engineering occupations, by state: 2006 and 2007

State	State agency R&D expenditures ($)		Individuals in S&E occupations		State agency R&D expenditures/individual in S&E occupation ($)	
	2006	2007	2006	2007	2006	2007
United States	1,021,016,894	1,223,449,593	5,382,290	5,591,990	190	219
Alabama	7,269,319	7,340,365	66,100	69,650	110	105
Alaska	10,019,060	9,526,100	10,720	11,990	935	795
Arizona	37,151,471	20,442,635	98,110	102,380	379	200
Arkansas	4,869,648	7,658,199	24,860	28,460	196	269
California	107,793,045	91,842,652	730,010	753,570	148	122
Colorado	8,997,236	11,924,981	133,730	138,990	67	86
Connecticut	19,209,064	29,285,710	79,380	80,280	242	365
Delaware	2,812,102	2,611,108	21,550	22,140	130	118
District of Columbia	1,173,076	2,009,000	64,120	63,150	18	32
Florida	42,329,624	96,968,573	246,190	244,140	172	397
Georgia	10,620,188	4,886,946	136,470	136,880	78	36
Hawaii	12,067,849	22,643,330	18,940	18,740	637	1,208
Idaho	2,280,873	2,739,006	NA	24,330	NA	113
Illinois	37,184,281	41,974,809	222,470	225,180	167	186
Indiana	6,220,575	40,534,381	80,110	83,080	78	488
Iowa	13,564,062	6,790,053	43,670	45,430	311	149
Kansas	14,348,384	11,752,696	48,620	50,040	295	235
Kentucky	17,558,997	11,960,634	44,680	49,030	393	244
Louisiana	11,216,568	6,587,314	40,180	38,450	279	171
Maine	17,509,051	27,525,552	15,950	15,960	1,098	1,725
Maryland	24,945,119	40,298,691	159,470	162,540	156	248
Massachusetts	10,729,419	5,600,189	198,670	205,610	54	27
Michigan	75,016,589	32,849,159	208,520	212,040	360	155
Minnesota	6,219,201	10,529,048	125,930	129,840	49	81
Mississippi	2,744,882	2,893,892	24,910	25,520	110	113
Missouri	18,465,303	15,567,277	96,420	102,170	192	152
Montana	8,606,319	8,200,230	13,010	13,240	662	619
Nebraska	5,602,163	4,043,480	32,500	31,420	172	129
Nevada	1,397,463	1,748,776	26,930	26,920	52	65
New Hampshire	2,040,544	1,685,178	27,680	28,450	74	59
New Jersey	25,900,482	59,747,701	176,460	186,120	147	321
New Mexico	3,105,000	672,921	30,800	33,440	101	20
New York	103,597,135	128,361,166	306,810	322,520	338	398
North Carolina	14,344,310	37,607,109	138,790	142,970	103	263
North Dakota	21,062,090	9,908,722	9,360	9,660	2,250	1,026
Ohio	55,068,629	114,086,509	185,190	196,390	297	581
Oklahoma	8,922,036	10,731,050	50,770	51,430	176	209
Oregon	7,382,722	7,389,914	64,520	67,890	114	109
Pennsylvania	117,320,158	103,973,448	214,910	218,890	546	475
Rhode Island	150,000	1,771,949	18,060	18,400	8	96
South Carolina	22,427,746	31,493,843	53,230	54,120	421	582
South Dakota	5,791,586	5,473,603	10,120	11,550	572	474
Tennessee	5,355,000	4,549,998	67,040	70,820	80	64
Texas	28,019,645	29,650,947	408,710	441,410	69	67
Utah	3,214,170	2,752,228	49,690	51,340	65	54
Vermont	1,680,533	1,529,805	12,780	12,760	131	120
Virginia	11,579,623	15,486,526	251,720	254,710	46	61
Washington	22,834,218	23,333,431	171,780	183,900	133	127
West Virginia	6,024,577	22,179,830	17,150	16,560	351	1,339
Wisconsin	10,949,155	12,828,572	96,860	99,380	113	129
Wyoming	6,326,604	19,500,357	7,640	8,110	828	2,404
Puerto Rico	1,458,790	2,326,241	23,850	NA	61	NA

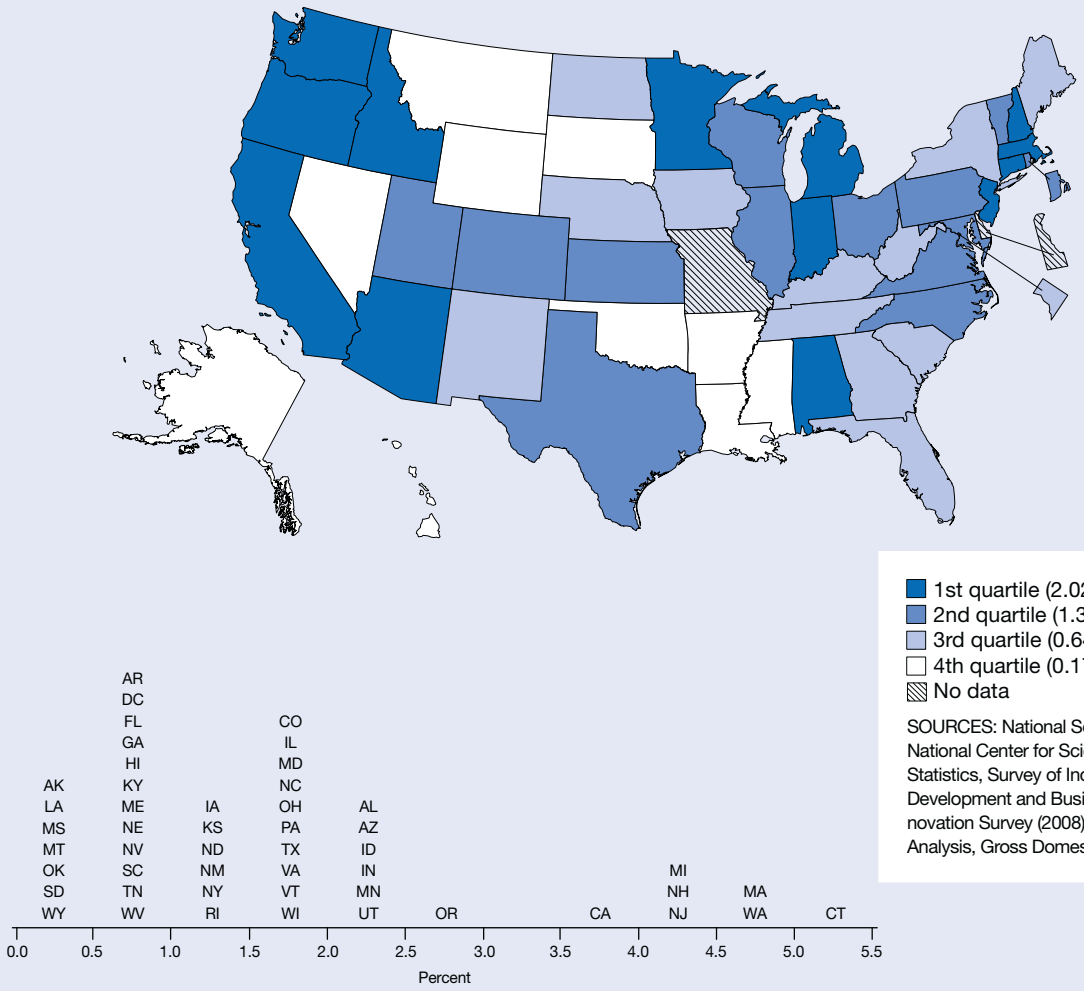
NA = not available

NOTES: R&D expenditures reported in current dollars. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES) and includes states with suppressed data. OES estimates for 2006 and 2007 S&E occupations based on May data.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Research and Development Expenditures (FY 2006, FY 2007); Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

Business-Performed R&D as a Percentage of Private-Industry Output

Figure 8-45
Business-performed R&D as a percentage of private-industry output: 2008



Findings

- The amount of R&D performed by business rose from nearly $192 billion in 2000 to about $267 billion in 2008, an increase of 39% (in current dollars).
- The value of this indicator exhibited little overall change between 2000 and 2008.
- Business performed R&D as a share of private industry output varied greatly among states in 2008, ranging from 0.17 to 5.18.
- Business R&D was concentrated in a few states—only 11 states had indicator values that exceeded the national average in 2008.

This indicator represents the role of R&D in a state's business activity. The business sector is the largest performer of U.S. R&D. It accounts for more than half of all U.S. applied research funding and a significant portion, over 80%, of all development funding. A high value for this indicator indicates that the businesses within a state are making a large investment in their R&D activities.

R&D is geographically concentrated and states vary in the type of research performed. The indicator reflects state differences in industrial structure as well as the behavior or priorities of individual businesses.

Private-industry output is the portion of state gross domestic product contributed by state businesses. Data are presented in current dollars.

Estimates for states with smaller economies are generally less precise than those for states with larger economies.

Table 8-45
Business-performed R&D as a percentage of private-industry output, by state: 2000, 2004, and 2008

State	Business-performed R&D ($millions)			Private-industry output ($millions)			Business-performed R&D/private-industry output (%)		
	2000	2004	2008	2000	2004	2008	2000	2004	2008
United States	192,197	201,131	267,373	8,736,085	10,360,070	12,513,954	2.20	1.94	2.14
Alabama	821 i	1,227	3,099	98,017	120,036	141,959	0.84	1.02	2.18
Alaska	48e	35e	69	20,604	27,762	40,851	0.23	0.13	0.17
Arizona	2,182 i	2,570	5,232	142,165	175,425	226,566	1.53	1.47	2.31
Arkansas	400	287	443	59,543	72,483	85,589	0.67	0.40	0.52
California	45,455	46,614	67,532	1,178,200	1,394,822	1,690,730	3.86	3.34	3.99
Colorado	3,143	4,008	4,019	152,673	176,819	223,771	2.06	2.27	1.80
Connecticut	4,132 i	7,177	10,518	149,857	171,687	202,965	2.76	4.18	5.18
Delaware	1,468 i	1,059	NA	37,496	46,886	53,116	3.92	2.26	NA
District of Columbia	196e	182e	571	38,028	51,268	65,387	0.52	0.35	0.87
Florida	3,773 i	3,486	4,178	422,803	546,699	656,807	0.89	0.64	0.64
Georgia	2,159 i	2,160	3,344	259,656	299,108	350,732	0.83	0.72	0.95
Hawaii	93e	131	269	32,634	40,639	51,153	0.28	0.32	0.53
Idaho	1,363	681	961	31,101	37,741	47,506	4.38	1.80	2.02
Illinois	8,393 i	8,554	8,900	430,158	490,751	575,417	1.95	1.74	1.55
Indiana	2,888 i	4,208	4,991	178,905	209,833	236,860	1.61	2.01	2.11
Iowa	762	963	1,509	82,694	103,266	119,473	0.92	0.93	1.26
Kansas	1,327 i	1,804 i	1,600	74,127	85,461	107,298	1.79	2.11	1.49
Kentucky	762	565	933	97,524	112,663	131,054	0.78	0.50	0.71
Louisiana	364e	311	411	114,856	150,660	191,186	0.32	0.21	0.21
Maine	255	213	308	31,480	38,279	42,842	0.81	0.56	0.72
Maryland	2,213	3,826	4,333	151,696	192,127	231,981	1.46	1.99	1.87
Massachusetts	10,857	11,819	15,028	249,074	283,069	332,816	4.36	4.18	4.52
Michigan	17,489 i	15,170	13,742	302,201	325,281	330,225	5.79	4.66	4.16
Minnesota	3,971	5,199	5,728	169,289	204,355	235,450	2.35	2.54	2.43
Mississippi	242e	160	252	54,551	63,966	79,700	0.44	0.25	0.32
Missouri	1,978	2,151	NA	160,270	184,238	211,133	1.23	1.17	NA
Montana	78e	70	148	17,880	23,201	30,161	0.44	0.30	0.49
Nebraska	335e	383	561	49,625	60,247	73,777	0.68	0.64	0.76
Nevada	433	417	677	68,368	90,497	118,834	0.63	0.46	0.57
New Hampshire	722	1,330	2,169	40,297	46,535	52,702	1.79	2.86	4.12
New Jersey	10,580	10,993	19,054	315,519	367,791	431,293	3.35	2.99	4.42
New Mexico	1,203 i	450	735	40,561	51,351	62,598	2.97	0.88	1.17
New York	11,622	8,793	11,455	691,330	795,998	991,767	1.68	1.10	1.16
North Carolina	4,535	4,565	6,246	246,974	284,688	346,083	1.84	1.60	1.80
North Dakota	83e	379 i	303	15,279	19,494	27,627	0.54	1.94	1.10
Ohio	6,245	5,516	7,405	341,648	382,095	417,814	1.83	1.44	1.77
Oklahoma	463	410	595	75,743	93,288	126,536	0.61	0.44	0.47
Oregon	1,533	3,057	4,074	98,912	119,455	153,690	1.55	2.56	2.65
Pennsylvania	8,473	8,005	9,735	357,944	416,222	491,213	2.37	1.92	1.98
Rhode Island	1,167 i	1,320 i	538	29,270	37,672	41,163	3.99	3.50	1.31
South Carolina	1,059	961	1,221	97,797	113,129	131,991	1.08	0.85	0.93
South Dakota	89e	72	133	20,827	26,707	33,859	0.43	0.27	0.39
Tennessee	1,644	1,630	1,608	158,028	190,752	218,374	1.04	0.85	0.74
Texas	10,048	10,992	16,166	651,993	805,767	1,071,943	1.54	1.36	1.51
Utah	1,063	1,089	1,945	59,897	70,844	97,181	1.77	1.54	2.00
Vermont	389	423	422	15,846	19,025	21,161	2.45	2.22	1.99
Virginia	2,683	4,006	6,142	216,942	271,629	329,458	1.24	1.47	1.86
Washington	8,235 i	8,840 i	13,876	197,965	221,032	286,249	4.16	4.00	4.85
West Virginia	329	202	334	34,494	40,074	48,549	0.95	0.50	0.69
Wisconsin	2,415	2,645	3,798	158,975	187,471	213,141	1.52	1.41	1.78
Wyoming	37e	23	63	14,369	19,782	34,223	0.26	0.12	0.18
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

e = estimated, more than 50% of value is imputed due to raking of state data; i = more than 50% of value is imputed; NA = not available

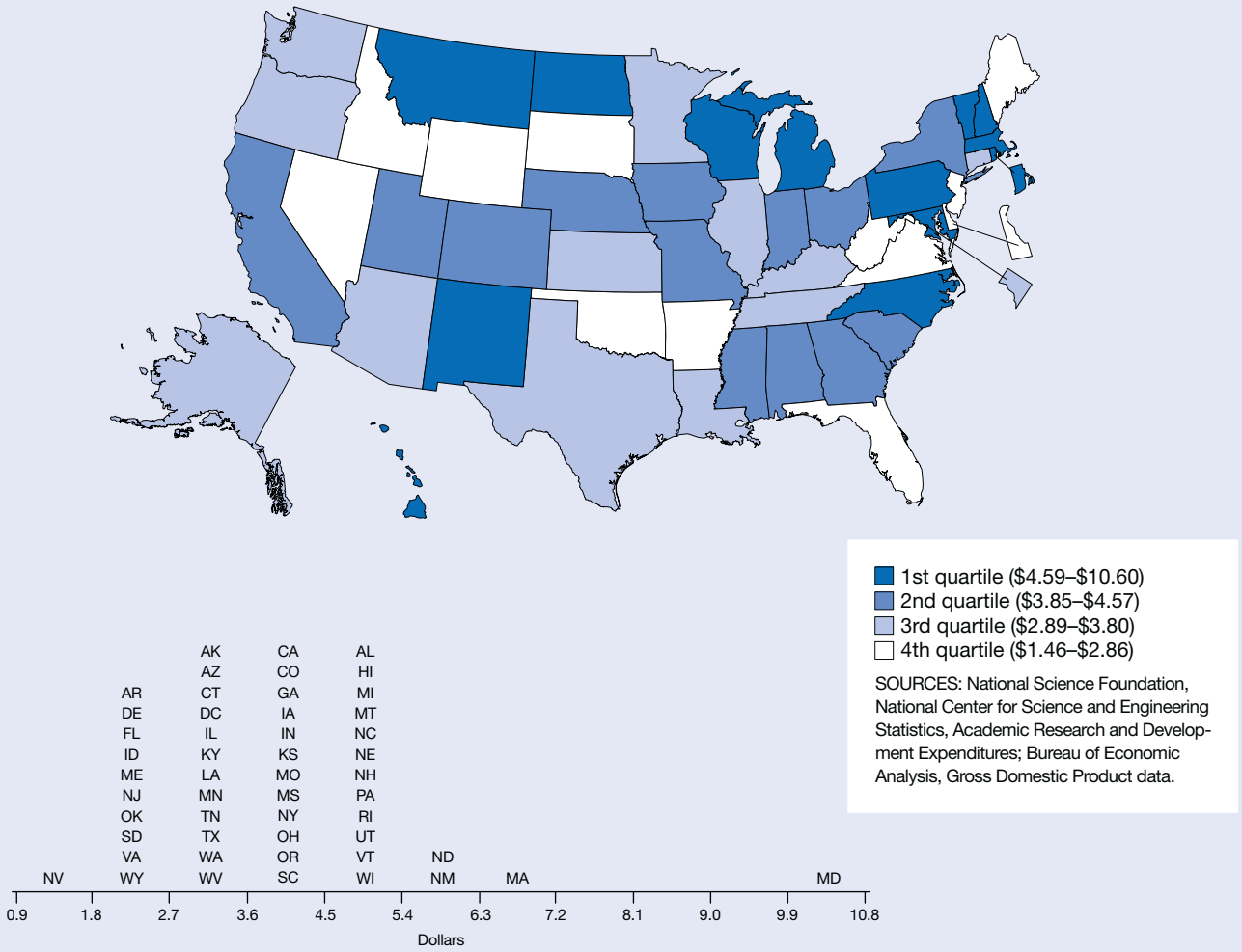
NOTE: R&D expenditures reported in current dollars.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Industrial Research and Development (various years) and Business R&D and Innovation Survey; Bureau of Economic Analysis, Gross Domestic Product data.

Science and Engineering Indicators 2012

Academic Science and Engineering R&D per $1,000 of Gross Domestic Product

Figure 8-46
Academic science and engineering R&D per $1,000 of gross domestic product: 2009



Findings

- Expenditures for research performed in academic institutions have almost doubled in a decade, rising from $30.0 billion in 2000 to $54.8 billion in 2009 (in current dollars).
- In the United States, growth in academic research increased more rapidly than gross domestic product (GDP), causing the value of this indicator to increase by 29% between 2000 and 2009. Most of this change occurred between 2000 and 2005.
- In 2009, the value of this indicator ranged from $1.46 to $10.60 across states.
- The largest percentage increase in academic R&D as a share of GDP occurred in South Dakota, an EPSCoR state, where the value of this indicator more than doubled between 2000 and 2009.
- While the average indicator value for both EPSCoR and non-EPSCoR states increased over the period 2000 to 2009, non-EPSCoR states continued to have nearly 6.5 times the amount of spending academic S&E R&D as EPSCoR states.

This indicator represents the ratio of S&E R&D expenditures at a state's colleges and universities to the size of the state's economy. Academic R&D performers account for a little over half of the U.S. basic research, about a third of total research (basic plus applied), and roughly 10% of all R&D conducted in the U.S. Academic R&D can be a valuable basis for future economic development.

Data on academic R&D are provided by the National Center for Science and Engineering Statistics and represent S&E R&D at U.S. colleges and universities with over $150,000 in R&D expenditures.

Data for the value of gross domestic product (GDP) by state and for R&D expenditures are shown in current dollars.

Table 8-46
Academic science and engineering R&D per $1,000 of gross domestic product, by state: 2000, 2005, and 2009

State	Academic S&E R&D ($thousands)			State GDP ($millions)			Academic R&D ($)/ $1,000 GDP		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
EPSCoR states	3,949,767	6,161,002	7,236,610	1,368,845	1,809,030	2,042,476	2.89	3.41	3.54
Non-EPSCoR states	25,784,807	39,205,177	47,239,938	8,457,057	10,662,668	11,873,474	3.05	3.68	3.98
Average EPSCoR state value	na	na	na	na	na	na	2.95	3.66	3.67
Average non-EPSCoR state value	na	na	na	na	na	na	3.25	3.87	4.16
United States	29,980,402	45,669,100	54,802,274	9,884,171	12,554,535	14,014,842	3.03	3.64	3.91
Alabama	428,122	589,860	761,982	116,014	151,096	166,819	3.69	3.90	4.57
Alaska	107,417	153,721	132,554	25,913	37,824	45,861	4.15	4.06	2.89
Arizona	465,777	720,184	873,063	161,901	222,968	249,711	2.88	3.23	3.50
Arkansas	130,894	209,518	239,593	68,146	88,227	98,795	1.92	2.37	2.43
California	4,053,042	6,264,908	7,406,053	1,317,343	1,691,991	1,847,048	3.08	3.70	4.01
Colorado	544,204	825,048	1,058,283	171,930	217,412	250,664	3.17	3.79	4.22
Connecticut	468,435	669,923	752,793	163,943	197,055	227,550	2.86	3.40	3.31
Delaware	78,126	115,751	133,810	40,957	54,749	60,660	1.91	2.11	2.21
District of Columbia	245,828	302,921	325,726	58,269	82,837	98,892	4.22	3.66	3.29
Florida	851,932	1,448,634	1,663,542	481,115	680,277	732,782	1.77	2.13	2.27
Georgia	926,749	1,274,410	1,565,574	294,479	363,154	394,117	3.15	3.51	3.97
Hawaii	161,300	240,247	300,302	41,372	56,869	65,428	3.90	4.22	4.59
Idaho	73,726	119,871	120,721	36,091	48,675	53,661	2.04	2.46	2.25
Illinois	1,170,625	1,771,107	2,113,124	474,444	569,544	631,970	2.47	3.11	3.34
Indiana	509,141	759,622	1,005,216	198,020	239,575	259,894	2.57	3.17	3.87
Iowa	418,263	548,301	562,569	93,287	120,258	136,062	4.48	4.56	4.13
Kansas	258,336	348,751	441,321	85,742	105,164	122,544	3.01	3.32	3.60
Kentucky	274,238	452,265	540,295	113,108	139,336	155,789	2.42	3.25	3.47
Louisiana	399,411	579,476	670,995	131,430	197,163	205,117	3.04	2.94	3.27
Maine	57,753	96,569	128,434	36,395	45,587	50,039	1.59	2.12	2.57
Maryland	1,507,549	2,356,905	3,021,052	182,953	248,139	285,116	8.24	9.50	10.60
Massachusetts	1,485,792	2,079,548	2,463,395	272,680	323,301	360,538	5.45	6.43	6.83
Michigan	995,756	1,456,218	1,742,051	336,786	375,260	369,671	2.96	3.88	4.71
Minnesota	416,411	558,259	757,745	188,449	238,367	258,499	2.21	2.34	2.93
Mississippi	217,064	353,078	416,804	65,615	81,500	94,406	3.31	4.33	4.42
Missouri	614,101	893,013	1,008,901	180,982	216,633	237,955	3.39	4.12	4.24
Montana	99,069	170,791	181,649	21,629	30,088	34,999	4.58	5.68	5.19
Nebraska	208,480	360,148	393,611	57,233	72,504	86,411	3.64	4.97	4.56
Nevada	106,340	178,492	182,016	75,907	114,771	125,037	1.40	1.56	1.46
New Hampshire	150,982	287,472	298,298	44,067	53,653	59,086	3.43	5.36	5.05
New Jersey	567,666	865,641	913,835	349,334	429,985	471,946	1.62	2.01	1.94
New Mexico	246,258	361,466	435,375	50,262	67,776	76,871	4.90	5.33	5.66
New York	2,290,812	3,610,287	4,224,536	770,621	961,941	1,094,104	2.97	3.75	3.86
North Carolina	1,040,017	1,655,844	2,160,505	281,418	354,973	407,032	3.70	4.66	5.31
North Dakota	67,406	149,994	185,708	18,250	24,672	31,626	3.69	6.08	5.87
Ohio	918,500	1,531,614	1,895,074	381,175	444,715	462,015	2.41	3.44	4.10
Oklahoma	252,419	291,697	335,840	91,292	120,662	142,388	2.76	2.42	2.36
Oregon	346,149	536,228	636,594	112,974	143,349	167,481	3.06	3.74	3.80
Pennsylvania	1,549,050	2,367,837	2,722,278	395,811	482,324	546,538	3.91	4.91	4.98
Rhode Island	129,697	199,709	246,322	33,522	44,169	47,470	3.87	4.52	5.19
South Carolina	294,184	487,776	611,539	115,392	141,929	158,786	2.55	3.44	3.85
South Dakota	27,269	67,012	102,299	24,009	31,641	38,255	1.14	2.12	2.67
Tennessee	405,013	726,078	832,991	177,582	224,522	243,849	2.28	3.23	3.42
Texas	2,039,642	3,073,724	3,984,258	732,987	970,997	1,146,647	2.78	3.17	3.47
Utah	308,059	400,276	500,421	69,483	90,748	111,301	4.43	4.41	4.50
Vermont	64,762	117,400	125,023	18,033	22,773	24,625	3.59	5.16	5.08
Virginia	587,718	910,163	1,088,367	261,894	356,852	409,732	2.24	2.55	2.66
Washington	642,934	901,558	1,083,799	227,828	279,405	331,639	2.82	3.23	3.27
West Virginia	73,420	146,489	174,486	41,419	51,964	61,043	1.77	2.82	2.86
Wisconsin	661,470	999,847	1,203,919	177,638	218,923	239,613	3.72	4.57	5.02
Wyoming	43,094	83,449	77,633	17,047	26,238	36,760	2.53	3.18	2.11
Puerto Rico	74,529	100,235	105,330	69,208	86,157	NA	1.08	1.16	NA

na = not applicable; NA = not available

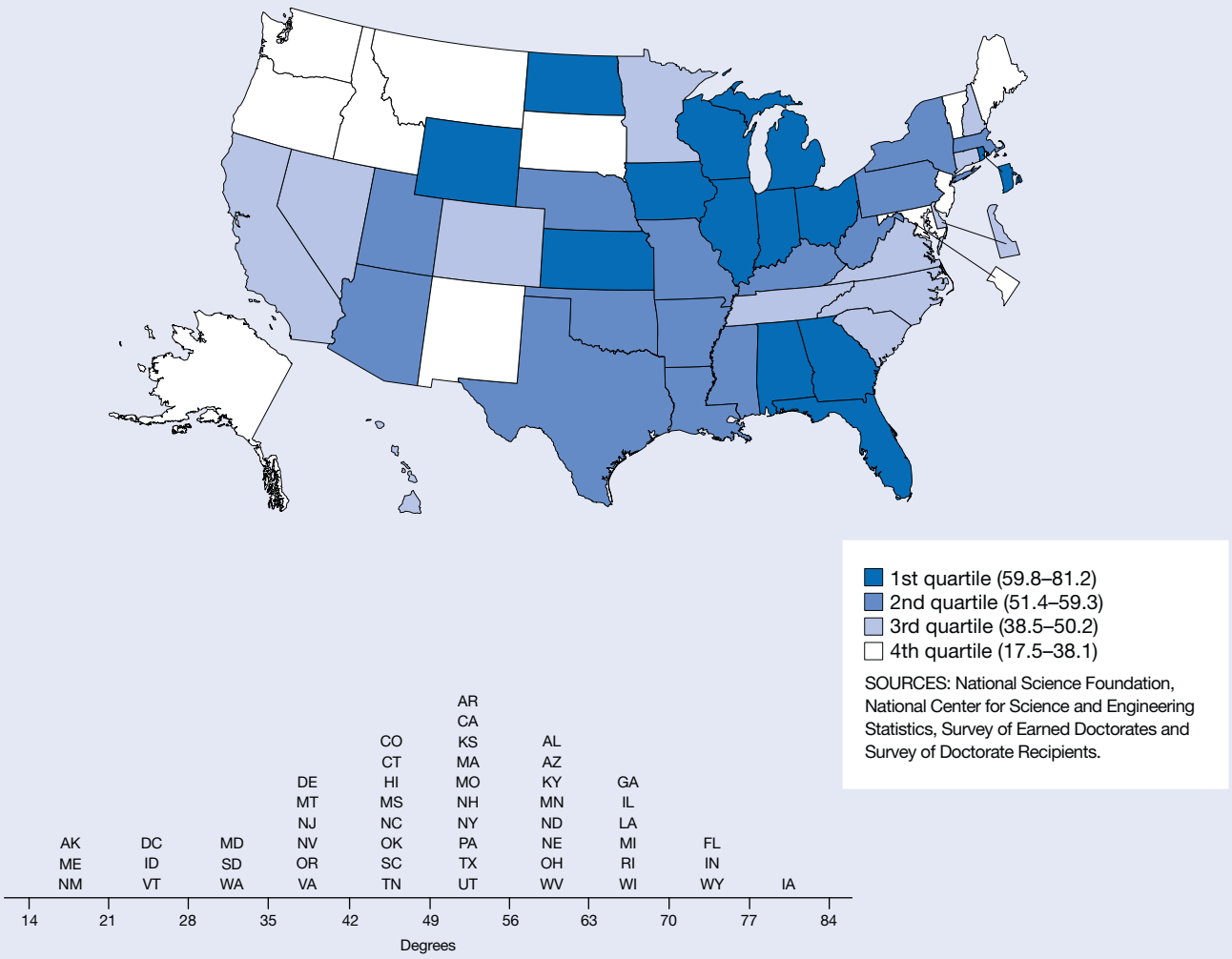
EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

NOTES: Academic R&D reported for institutuons with R&D over $150,000. GDP reported in current dollars. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Academic Research and Development Expenditures (various years); Bureau of Economic Analysis, Gross Domestic Product data.

Science and Engineering Doctorates Conferred per 1,000 Employed S&E Doctorate Holders

Figure 8-47
Science and engineering doctorates conferred per 1,000 employed S&E doctorate holders: 2008



Findings

- In 2008, just over 33,000 S&E doctorates were awarded by U.S. academic institutions, approximately 26% more than in 1997.
- The value of this indicator in 2008 is back to the level it was in 1997 after a decline early in the decade and a slow increase to the current level.
- Low state values on this indicator may indicate either a small S&E graduate-level educational program or a concentration of S&E doctorate-level employment opportunities that attract significant numbers of S&E doctorate holders who were educated elsewhere. Low-ranking EPSCoR states tend to fall into the former category.

This indicator represents the rate at which the states are training new S&E doctorate recipients for entry into the workforce. High values indicate relatively large production of new doctorate holders compared with the existing stock of employed doctorate holders. States with relatively low values may need to attract S&E doctorate holders from elsewhere to meet the needs of local employers.

Data on doctorates conferred and on employed doctorate holders include those with doctoral degrees in computer and mathematical sciences; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. Both sets of data exclude individuals with doctorates from foreign institutions. The employed doctorate data also excludes those above the age of 75. Data for doctorates conferred are presented by the location where the doctorate was earned; employment data for S&E doctorate holders are presented by employment location regardless of residence. Estimates for states with smaller populations of employed doctorate holders are generally less precise than estimates for states with larger populations.

The indicator does not take into account any postgraduation mobility of recent S&E doctorate recipients to their place of employment. Doctorate recipients with temporary visas may decide to return home after graduation to begin their careers. The indicator also does not cover individuals with non-U.S. S&E doctorates who are working in the United States.

Table 8-47
Science and engineering doctorates conferred per 1,000 employed S&E doctorate holders, by state: 1997, 2003, and 2008

State	S&E doctorates conferred			Employed S&E doctorate holders[a]			S&E doctorates conferred/1,000 employed S&E doctorate holders		
	1997	2003	2008	1997	2003	2008	1997	2003	2008
United States	26,392	25,329	33,145	516,560	590,910	647,800	51.1	42.9	51.2
Alabama	283	293	356	6,610	5,730	6,000	42.8	51.1	59.3
Alaska	15	31	21	1,110	1,140	1,200	13.5	27.2	17.5
Arizona	457	417	526	6,280	7,500	8,800	72.8	55.6	59.8
Arkansas	68	74	120	2,320	2,790	2,400	29.3	26.5	50.0
California	3,352	3,768	4,800	70,490	86,550	95,700	47.6	43.5	50.2
Colorado	603	555	589	10,740	12,220	13,100	56.1	45.4	45.0
Connecticut	396	402	479	8,770	9,780	10,600	45.2	41.1	45.2
Delaware	117	84	128	3,710	3,000	3,300	31.5	28.0	38.8
District of Columbia	318	345	352	11,800	13,800	13,100	26.9	25.0	26.9
Florida	768	943	1,387	13,330	16,000	18,600	57.6	58.9	74.6
Georgia	519	632	929	9,880	12,220	13,500	52.5	51.7	68.8
Hawaii	139	105	152	2,550	3,040	3,200	54.5	34.5	47.5
Idaho	58	69	78	2,030	2,450	2,800	28.6	28.2	27.9
Illinois	1,499	1,373	1,690	21,260	22,400	24,200	70.5	61.3	69.8
Indiana	638	622	755	7,570	9,590	10,300	84.3	64.9	73.3
Iowa	357	274	422	4,120	4,660	5,200	86.7	58.8	81.2
Kansas	246	244	240	3,770	4,060	4,300	65.3	60.1	55.8
Kentucky	194	191	281	4,110	4,720	4,800	47.2	40.5	58.5
Louisiana	307	263	333	5,360	5,420	5,200	57.3	48.5	64.0
Maine	42	33	43	2,150	2,110	2,300	19.5	15.6	18.7
Maryland	620	578	840	21,020	25,280	28,100	29.5	22.9	29.9
Massachusetts	1,490	1,345	1,891	23,330	30,220	35,000	63.9	44.5	54.0
Michigan	951	943	1,099	15,050	17,130	16,700	63.2	55.0	65.8
Minnesota	504	474	739	9,810	11,110	12,600	51.4	42.7	58.7
Mississippi	139	130	156	3,000	3,120	3,300	46.3	41.7	47.3
Missouri	430	476	521	9,490	9,080	10,000	45.3	52.4	52.1
Montana	57	52	80	1,690	1,740	2,100	33.7	29.9	38.1
Nebraska	148	164	159	3,010	2,820	2,800	49.2	58.2	56.8
Nevada	58	75	98	1,620	2,070	2,800	35.8	36.2	35.0
New Hampshire	117	122	149	2,230	2,640	2,900	52.5	46.2	51.4
New Jersey	691	607	757	20,440	20,980	21,300	33.8	28.9	35.5
New Mexico	161	136	143	7,480	8,120	7,800	21.5	16.7	18.3
New York	2,445	2,099	2,713	40,080	44,890	49,000	61.0	46.8	55.4
North Carolina	678	681	925	13,730	17,380	20,100	49.4	39.2	46.0
North Dakota	53	64	74	1,350	1,130	1,300	39.3	56.6	56.9
Ohio	1,173	937	1,248	18,700	20,870	20,800	62.7	44.9	60.0
Oklahoma	210	172	208	4,580	4,640	4,500	45.9	37.1	46.2
Oregon	299	274	335	6,210	7,830	8,700	48.1	35.0	38.5
Pennsylvania	1,279	1,248	1,594	23,940	27,820	30,000	53.4	44.9	53.1
Rhode Island	166	147	190	2,450	3,170	2,800	67.8	46.4	67.9
South Carolina	206	191	288	4,780	5,210	6,300	43.1	36.7	45.7
South Dakota	36	32	38	1,060	1,020	1,300	34.0	31.4	29.2
Tennessee	372	320	449	8,520	8,840	10,100	43.7	36.2	44.5
Texas	1,575	1,426	2,166	28,570	33,280	39,900	55.1	42.8	54.3
Utah	253	211	288	4,800	4,240	5,600	52.7	49.8	51.4
Vermont	35	27	50	1,750	1,770	1,800	20.0	15.3	27.8
Virginia	697	636	868	15,250	18,880	21,300	45.7	33.7	40.8
Washington	426	409	553	13,360	15,430	17,700	31.9	26.5	31.2
West Virginia	55	95	121	1,980	1,980	2,000	27.8	48.0	60.5
Wisconsin	631	498	671	8,460	8,390	9,900	74.6	59.4	67.8
Wyoming	61	42	53	860	650	700	70.9	64.6	75.7
Puerto Rico	65	96	214	660	1,710	2,000	98.5	56.1	107.0

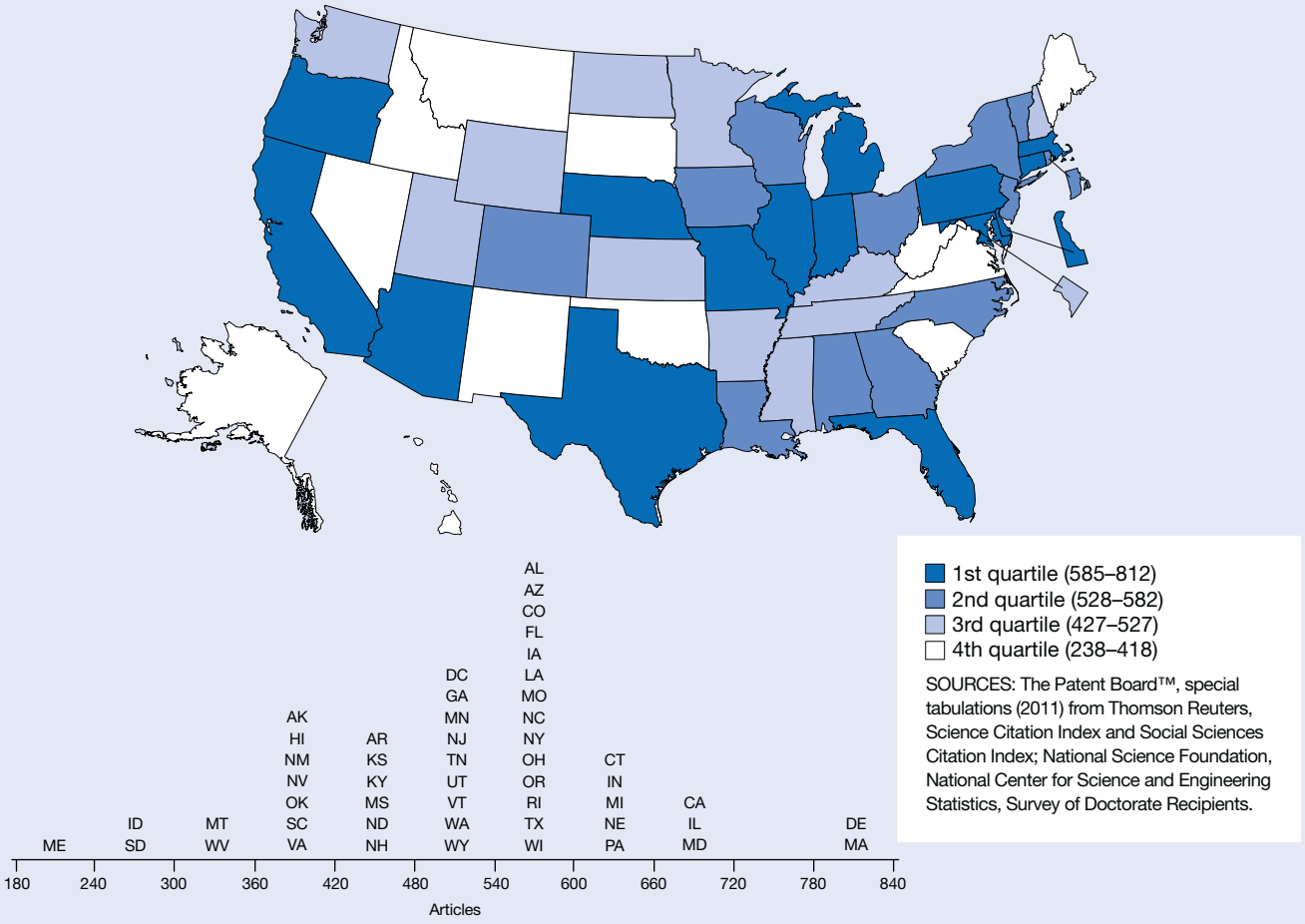
[a]Coefficients of variation for estimates of employed S&E doctorate holders provided in appendix table 8-13.

NOTE: Data on U.S. S&E doctorate holders classified by employment location.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates and Survey of Doctorate Recipients (various years).

Academic Science and Engineering Article Output per 1,000 S&E Doctorate Holders in Academia

Figure 8-48
Academic science and engineering article output per 1,000 S&E doctorate holders in academia: 2008



Findings

- Between 1997 and 2008, the number of scientific and engineering articles published by academia increased from 138,000 to 168,000 and the number of S&E doctorate holders in academia increased from 246,000 to 290,000.
- In 2008, the value of this indicator ranged from 238 S&E articles per 1,000 doctorate holders in academia to 812 across the states.
- The publication rate for academic S&E doctorate holders in states in the top quartile of this indicator was nearly twice as high as for states in the bottom quartile.
- The average indicator value for EPSCoR states was considerably lower than the average indicator value for non-EPSCoR states.

The volume of peer-reviewed articles per 1,000 academic S&E doctorate holders is an approximate measure of their contribution to scientific knowledge. Publications are only one measure of academic productivity, which includes trained personnel, patents, trademarks, copyrights, and other outputs. A high value on this indicator shows that the S&E faculty in a state's academic institutions are generating a high volume of publications relative to other states. Academic institutions include 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Research is more central to the mission of some of these institutions than others.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Reuters in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at N institutions, each institution would be credited with 1/N of the article.

S&E doctorates include those in computer sciences; mathematics; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data are estimates and exclude those with doctorates from foreign institutions and those above the age of 75. Estimates for states with smaller populations of S&E doctorate holders are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders in academia are presented by employment location regardless of residence.

Table 8-48
Academic science and engineering article output per 1,000 S&E doctorate holders in academia, by state: 1997, 2003, and 2008

State	Academic S&E article output			S&E doctorate holders in academia[a]			Academic articles/ 1,000 academic doctorate holders		
	1997	2003	2008	1997	2003	2008	1997	2003	2008
EPSCoR states	16,096	17,479	19,506	41,750	42,890	43,300	386	408	450
Non-EPSCoR states	120,251	129,972	146,975	201,710	232,390	244,100	596	559	602
Average EPSCoR state value	na	na	na	na	na	na	372	394	445
Average non-EPSCoR state value	na	na	na	na	na	na	585	546	583
United States	137,597	148,722	167,852	245,670	277,970	289,500	560	535	580
Alabama	1,838	1,851	1,974	4,640	3,240	3,500	396	571	564
Alaska	160	195	285	450	600	700	356	325	407
Arizona	2,133	2,152	2,455	3,050	3,660	4,200	699	588	585
Arkansas	575	664	716	1,520	1,850	1,500	379	359	477
California	16,862	18,744	21,001	26,050	29,830	30,500	647	628	689
Colorado	2,408	2,615	2,855	4,550	5,320	5,200	529	492	549
Connecticut	2,692	2,748	3,070	4,000	4,490	5,100	673	612	602
Delaware	476	580	650	750	800	800	635	725	812
District of Columbia	1,083	1,061	1,106	2,210	2,690	2,100	490	394	527
Florida	3,976	4,551	5,678	6,850	8,710	9,700	580	523	585
Georgia	3,076	3,640	4,299	5,780	7,240	8,100	532	503	531
Hawaii	531	572	697	1,380	1,910	1,900	385	299	367
Idaho	287	305	360	780	1,190	1,400	368	257	257
Illinois	6,469	6,959	7,662	10,620	10,930	11,500	609	637	666
Indiana	2,862	3,022	3,645	4,680	5,810	5,900	612	520	618
Iowa	2,130	2,220	2,232	3,100	3,390	3,900	687	655	572
Kansas	1,134	1,235	1,292	2,260	2,380	2,700	502	519	478
Kentucky	1,320	1,434	1,604	3,040	3,320	3,400	434	432	472
Louisiana	1,810	1,759	1,753	3,580	3,570	3,100	506	493	565
Maine	238	267	285	1,340	1,150	1,200	178	233	238
Maryland	4,259	4,946	5,453	6,400	7,060	8,200	666	700	665
Massachusetts	8,762	9,445	10,834	11,810	14,630	13,800	742	646	785
Michigan	4,620	5,071	5,804	7,850	9,050	9,000	589	560	645
Minnesota	2,300	2,287	2,634	4,490	5,600	5,400	512	408	488
Mississippi	583	710	840	1,940	2,060	1,900	301	345	442
Missouri	3,032	3,122	3,443	5,770	5,770	5,800	526	541	594
Montana	256	363	396	1,020	1,090	1,200	251	333	330
Nebraska	983	991	1,115	2,360	1,880	1,800	417	527	619
Nevada	352	458	571	980	1,260	1,500	359	364	381
New Hampshire	579	627	683	1,130	1,360	1,600	512	461	427
New Jersey	2,952	3,150	3,326	5,290	6,160	6,300	558	511	528
New Mexico	782	792	835	2,450	2,960	2,300	319	268	363
New York	11,781	12,179	13,378	20,900	22,360	23,100	564	545	579
North Carolina	4,762	5,321	6,170	7,740	9,650	10,600	615	551	582
North Dakota	262	315	411	900	740	900	292	426	457
Ohio	4,900	5,088	5,635	9,750	10,620	9,900	503	479	569
Oklahoma	853	933	1,081	2,680	2,900	3,000	318	322	360
Oregon	1,550	1,648	1,972	2,690	3,690	3,300	576	447	598
Pennsylvania	7,756	8,260	9,419	12,150	15,650	15,200	638	528	620
Rhode Island	828	871	1,020	1,730	2,180	1,800	479	399	567
South Carolina	1,155	1,428	1,587	3,230	3,000	3,800	358	476	418
South Dakota	136	165	202	700	670	700	194	246	289
Tennessee	2,123	2,310	2,826	4,720	5,210	5,500	450	443	514
Texas	8,415	9,423	10,755	13,760	15,240	18,400	612	618	585
Utah	1,492	1,538	1,786	3,080	2,770	3,400	485	555	525
Vermont	369	383	475	1,140	1,100	900	324	349	528
Virginia	2,822	2,991	3,593	5,830	7,630	8,800	484	392	408
Washington	3,091	3,412	3,605	5,410	6,740	7,300	571	506	494
West Virginia	400	375	417	1,190	1,190	1,200	336	315	348
Wisconsin	3,025	3,129	3,445	5,390	5,180	6,000	561	604	574
Wyoming	189	204	255	560	490	500	337	417	510
Puerto Rico	167	212	265	640	1,360	1,300	261	156	204

na = not applicable

EPSCoR = Experimental Program to Stimulate Competitive Research

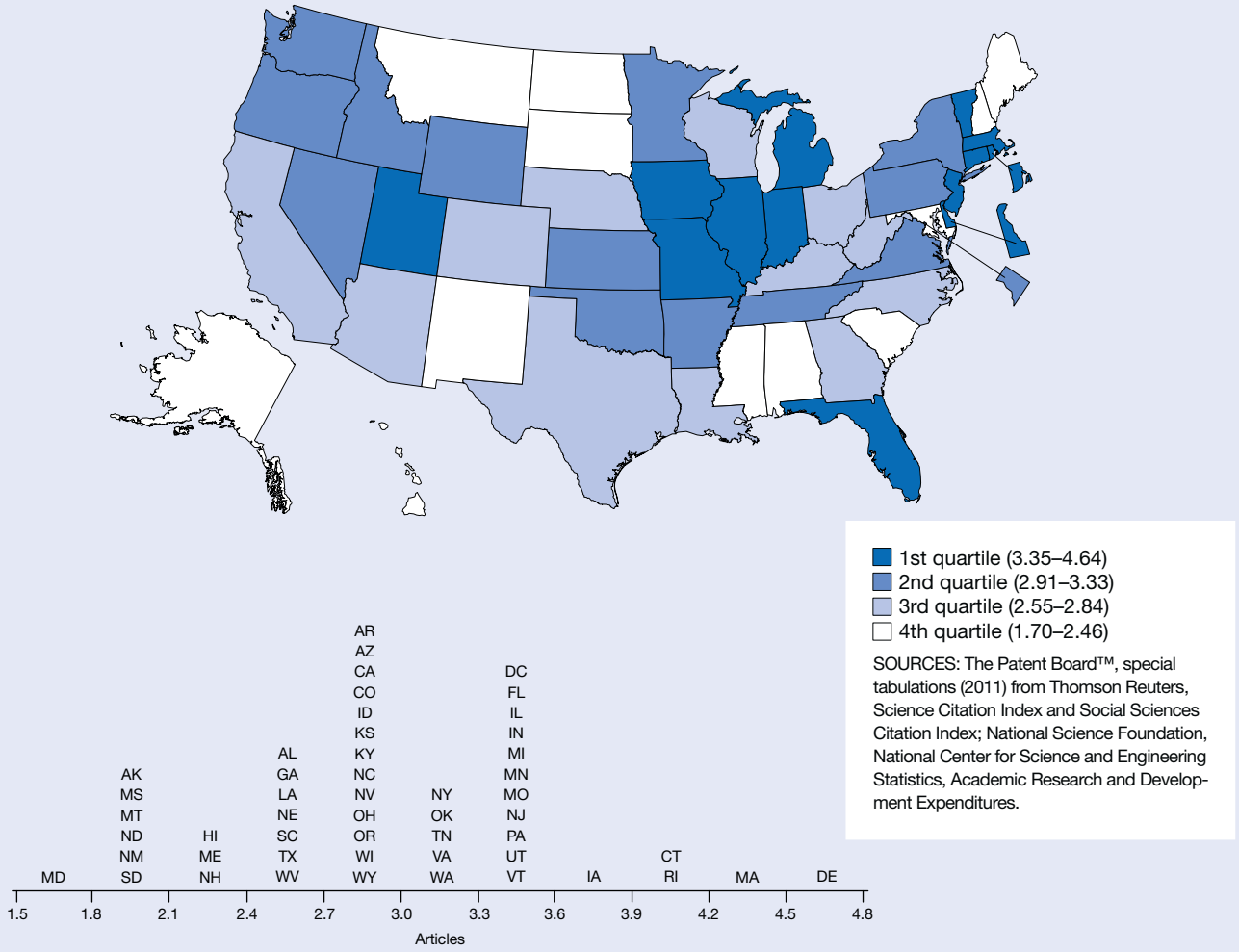
[a]Coefficients of variation for estimates of S&E doctorate holders in academia presented in appendix table 8-14.

NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: The Patent Board™, special tabulations (2011) from Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients.

Academic Science and Engineering Article Output per $1 Million of Academic S&E R&D

Figure 8-49
Academic science and engineering article output per $1 million of academic S&E R&D: 2009



Findings

- From 2000 to 2009, the number of academic S&E publications rose from about 137,000 to about 163,000—an increase of 19% that may reflect both an increase in publications and an increase in the size of the journal set.
- In 2009, academic researchers produced an average of 3.0 publications per $1 million of academic R&D, compared with 4.6 in 2000. This partly reflects the effect of general price inflation but may also indicate rising academic research costs.
- The value of this indicator ranged from 1.70 to 4.64 across the states in 2009.
- Between 2000 and 2009, the value for this indicator decreased in all states except Alaska and by 35% nationwide.

This indicator represents the relationship between the number of academic S&E publications and the amount of money expended for academic R&D. Academic institutions include 2-year colleges, 4-year colleges or universities, medical schools, and university-affiliated research centers. This indicator is not an efficiency measure; it is affected by the highly variable costs of R&D and by publishing conventions in different fields and institutions. It may also reflect variations in field emphasis among states and institutions.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Reuters in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at N institutions, each institution would be credited with $1/N$ of the article.

Table 8-49
Academic science and engineering article output per $1 million of academic S&E R&D, by state: 2000, 2004, and 2009

State	Academic S&E article output			Academic S&E R&D ($millions)			Academic articles/ $1 million academic R&D		
	2000	2004	2009	2000	2004	2009	2000	2004	2009
United States	137,088	142,535	162,969	29,980	43,143	54,802	4.57	3.30	2.97
Alabama	1,714	1,760	1,833	428	572	762	4.00	3.08	2.41
Alaska	167	180	256	107	146	133	1.55	1.23	1.93
Arizona	2,059	2,092	2,478	466	651	873	4.42	3.21	2.84
Arkansas	543	626	710	131	183	240	4.15	3.42	2.96
California	16,962	17,873	20,722	4,053	6,013	7,406	4.19	2.97	2.80
Colorado	2,381	2,360	2,900	544	771	1,058	4.38	3.06	2.74
Connecticut	2,659	2,718	3,006	468	649	753	5.68	4.19	3.99
Delaware	492	560	621	78	115	134	6.29	4.87	4.64
District of Columbia	1,074	999	1,083	246	303	326	4.37	3.30	3.32
Florida	4,029	4,503	5,604	852	1,307	1,664	4.73	3.45	3.37
Georgia	3,072	3,570	4,210	927	1,222	1,566	3.31	2.92	2.69
Hawaii	528	538	680	161	241	300	3.27	2.23	2.27
Idaho	265	304	351	74	117	121	3.59	2.60	2.91
Illinois	6,466	6,682	7,513	1,171	1,713	2,113	5.52	3.90	3.56
Indiana	2,871	2,854	3,507	509	841	1,005	5.64	3.39	3.49
Iowa	2,094	2,033	2,109	418	532	563	5.01	3.82	3.75
Kansas	1,219	1,118	1,283	258	333	441	4.72	3.36	2.91
Kentucky	1,282	1,356	1,500	274	424	540	4.67	3.20	2.78
Louisiana	1,716	1,689	1,718	399	559	671	4.30	3.02	2.56
Maine	255	251	287	58	99	128	4.41	2.53	2.24
Maryland	4,457	4,728	5,127	1,508	2,268	3,021	2.96	2.08	1.70
Massachusetts	8,957	9,249	10,490	1,486	2,000	2,463	6.03	4.62	4.26
Michigan	4,609	4,870	5,888	996	1,397	1,742	4.63	3.49	3.38
Minnesota	2,147	2,238	2,519	416	535	758	5.16	4.18	3.32
Mississippi	614	689	859	217	348	417	2.83	1.98	2.06
Missouri	2,933	2,940	3,376	614	842	1,009	4.78	3.49	3.35
Montana	295	323	380	99	155	182	2.98	2.08	2.09
Nebraska	934	1,035	1,002	208	325	394	4.48	3.19	2.55
Nevada	400	393	536	106	164	182	3.76	2.40	2.95
New Hampshire	558	656	661	151	277	298	3.70	2.37	2.22
New Jersey	2,856	2,860	3,195	568	805	914	5.03	3.55	3.50
New Mexico	765	757	791	246	304	435	3.11	2.49	1.82
New York	11,535	11,820	13,019	2,291	3,352	4,225	5.04	3.53	3.08
North Carolina	4,851	5,133	5,989	1,040	1,447	2,161	4.66	3.55	2.77
North Dakota	236	323	345	67	152	186	3.50	2.13	1.86
Ohio	4,801	4,976	5,364	919	1,320	1,895	5.23	3.77	2.83
Oklahoma	849	897	1,101	252	283	336	3.36	3.17	3.28
Oregon	1,600	1,637	1,860	346	505	637	4.62	3.24	2.92
Pennsylvania	7,649	7,870	9,071	1,549	2,208	2,722	4.94	3.56	3.33
Rhode Island	826	838	982	130	192	246	6.37	4.36	3.99
South Carolina	1,219	1,364	1,507	294	456	612	4.14	2.99	2.46
South Dakota	131	149	207	27	59	102	4.80	2.52	2.02
Tennessee	2,141	2,249	2,717	405	658	833	5.29	3.42	3.26
Texas	8,433	8,924	10,335	2,040	2,879	3,984	4.13	3.10	2.59
Utah	1,491	1,427	1,723	308	407	500	4.84	3.51	3.44
Vermont	390	383	426	65	116	125	6.02	3.30	3.41
Virginia	2,845	2,835	3,439	588	849	1,088	4.84	3.34	3.16
Washington	3,153	3,168	3,386	643	897	1,084	4.90	3.53	3.12
West Virginia	359	352	470	73	135	174	4.89	2.60	2.69
Wisconsin	2,845	2,967	3,318	661	957	1,204	4.30	3.10	2.76
Wyoming	173	202	232	43	60	78	4.01	3.36	2.98
Puerto Rico	191	215	282	75	NA	105	2.56	NA	2.67

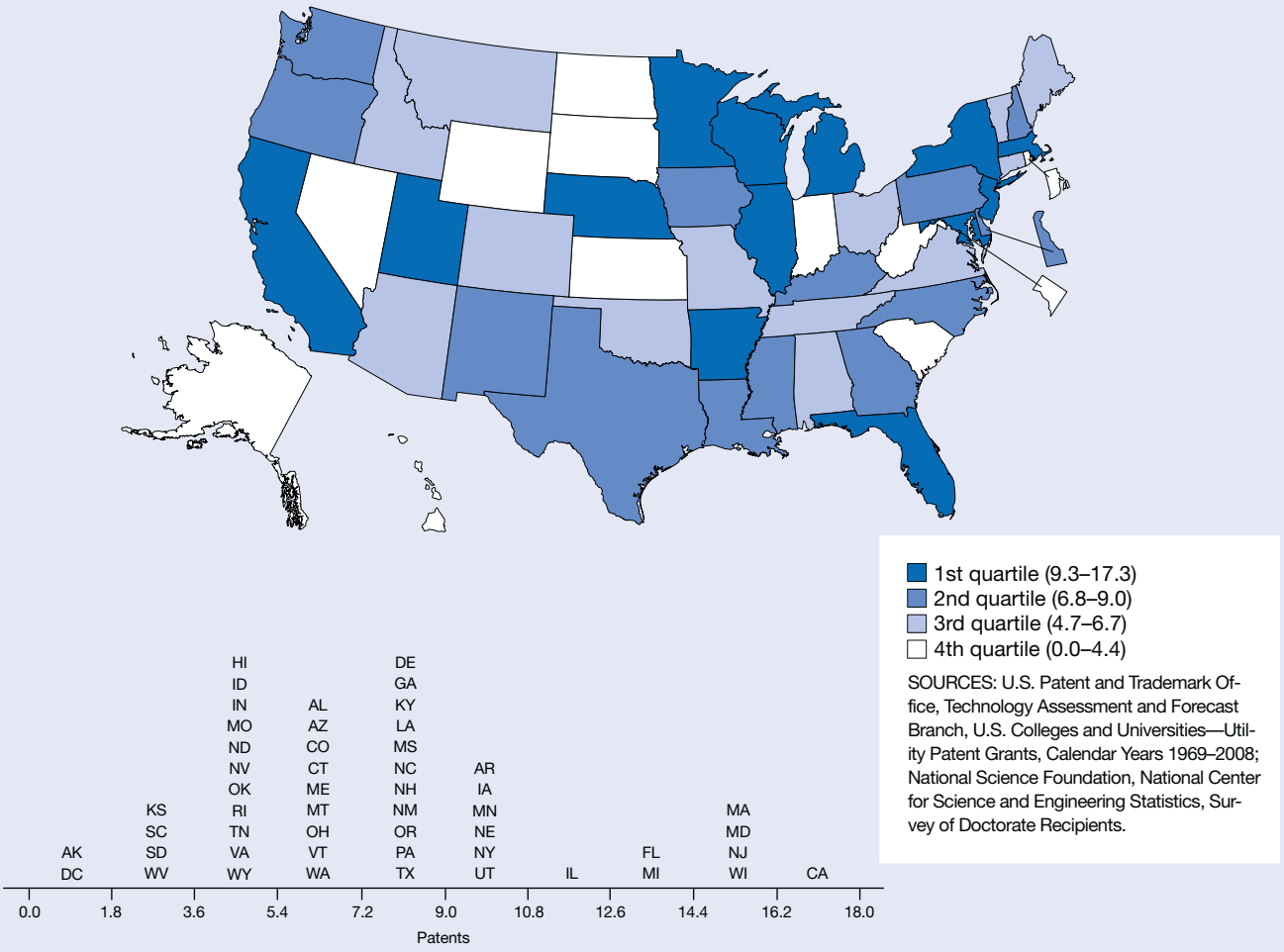
NA = not available

NOTE: Academic R&D expenditures reported in current dollars.

SOURCES: The Patent Board™, special tabulations (2011) from Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; National Science Foundation, National Center for Science and Engineering Statistics, Academic R&D Expenditures.

Academic Patents Awarded per 1,000 Science and Engineering Doctorate Holders in Academia

Figure 8-50
Academic patents awarded per 1,000 science and engineering doctorate holders in academia: 2008



Findings

- Throughout the United States, the number of patents assigned to academic institutions increased from about 2,400 in 1997 to about 2,800 in 2008, an increase of 15%; the number of academic S&E doctorate holders rose by 18% during the same period.
- In 2008, states varied widely on this indicator, with values ranging from 0 to 17.3 patents per 1,000 S&E doctorate holders employed in academia, possibly indicating a difference in patenting philosophy or the mix of industries with which these academic institutions deal.
- California showed the highest level of both academic patenting and venture capital investment.
- The value of this indicator fluctuates over time and across states.

Since the early 1980s, academic institutions have increasingly been viewed as engines of economic growth. Growing attention has been paid to the role of academic R&D in creating new products, processes, and services. One indicator of such R&D results is the volume of patents assigned to academic institutions. Academic patenting is highly concentrated and partly reflects the resources devoted to institutional patenting offices.

This indicator relates the number of academic-owned utility patents to the size of the doctoral S&E workforce in academia and is one approximate measure of the degree to which results with perceived economic value are generated by the doctoral academic workforce. Academia includes 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Utility patents, commonly known as patents for inventions, include any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound, and represent a key measure of intellectual property. Changes in the number of patents assigned to academic institutions may occur for a given year when the assignee is changed or when the list of approved academic institutions is modified, as occurred in 2005.

S&E doctorates include those in computer sciences; mathematics; biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data exclude those with doctorates from foreign institutions and those above the age of 75. For states with smaller populations, estimates of doctorate holders in academia are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders are presented by employment location regardless of residence.

Table 8-50
Academic patents awarded per 1,000 science and engineering doctorate holders in academia, by state: 1997, 2003, and 2008

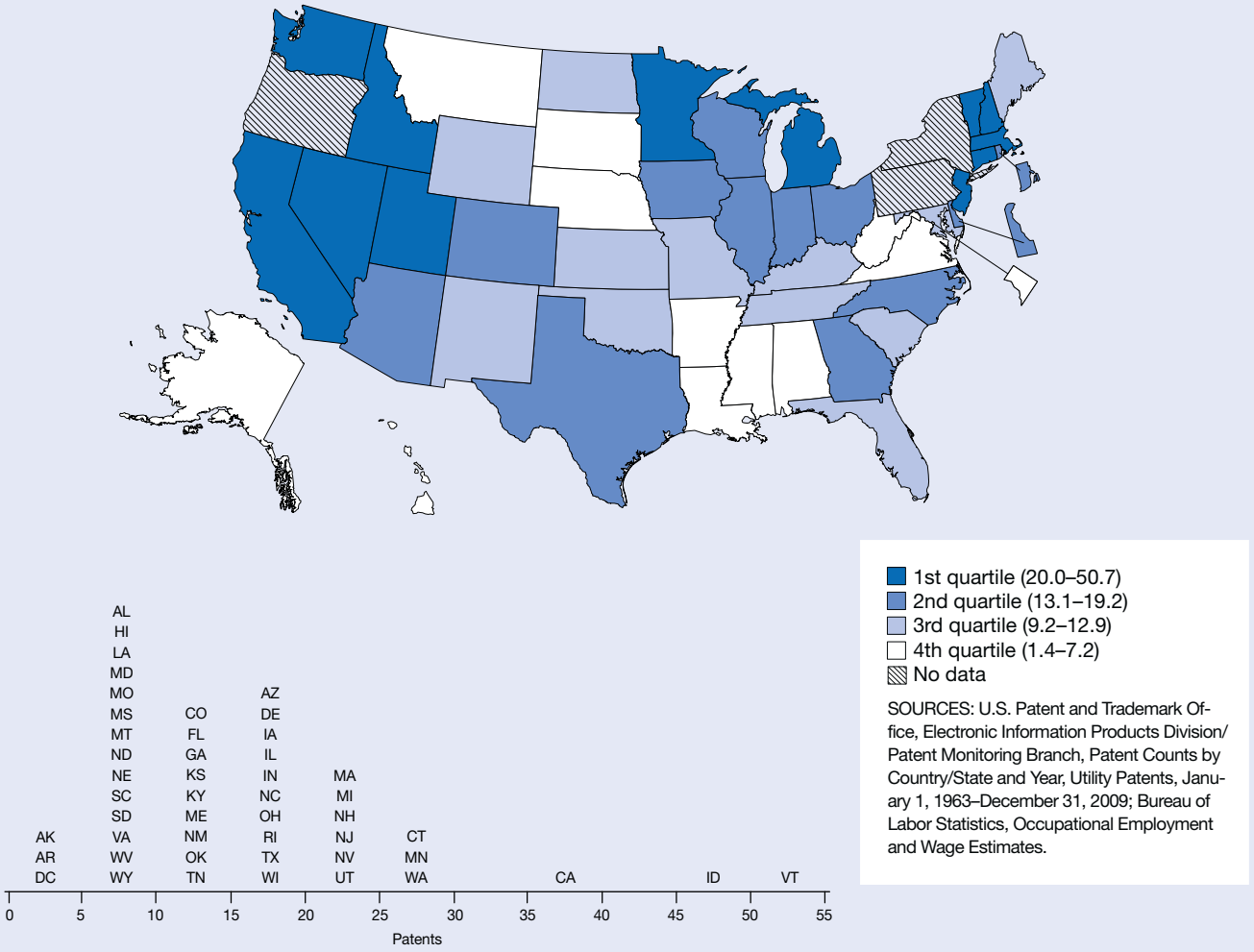
State	Patents awarded to academic institutions			S&E doctorate holders in academia[a]			Academic patents/1,000 academic S&E doctorate holders		
	1997	2003	2008	1997	2003	2008	1997	2003	2008
United States	2,443	3,256	2,818	245,670	277,970	289,500	9.9	11.7	9.7
Alabama	23	41	19	4,640	3,240	3,500	5.0	12.7	5.4
Alaska	2	3	0	450	600	700	4.4	5.0	0.0
Arizona	22	22	25	3,050	3,660	4,200	7.2	6.0	6.0
Arkansas	8	24	14	1,520	1,850	1,500	5.3	13.0	9.3
California	428	664	527	26,050	29,830	30,500	16.4	22.3	17.3
Colorado	37	32	32	4,550	5,320	5,200	8.1	6.0	6.2
Connecticut	37	44	28	4,000	4,490	5,100	9.3	9.8	5.5
Delaware	5	7	7	750	800	800	6.7	8.8	8.8
District of Columbia	4	3	2	2,210	2,690	2,100	1.8	1.1	1.0
Florida	91	130	129	6,850	8,710	9,700	13.3	14.9	13.3
Georgia	49	76	68	5,780	7,240	8,100	8.5	10.5	8.4
Hawaii	6	7	7	1,380	1,910	1,900	4.3	3.7	3.7
Idaho	8	7	7	780	1,190	1,400	10.3	5.9	5.0
Illinois	79	105	131	10,620	10,930	11,500	7.4	9.6	11.4
Indiana	39	23	22	4,680	5,810	5,900	8.3	4.0	3.7
Iowa	44	56	35	3,100	3,390	3,900	14.2	16.5	9.0
Kansas	7	20	8	2,260	2,380	2,700	3.1	8.4	3.0
Kentucky	15	21	25	3,040	3,320	3,400	4.9	6.3	7.4
Louisiana	25	29	24	3,580	3,570	3,100	7.0	8.1	7.7
Maine	1	4	7	1,340	1,150	1,200	0.7	3.5	5.8
Maryland	71	128	119	6,400	7,060	8,200	11.1	18.1	14.5
Massachusetts	177	208	222	11,810	14,630	13,800	15.0	14.2	16.1
Michigan	97	115	122	7,850	9,050	9,000	12.4	12.7	13.6
Minnesota	50	68	55	4,490	5,600	5,400	11.1	12.1	10.2
Mississippi	6	11	17	1,940	2,060	1,900	3.1	5.3	8.9
Missouri	37	41	27	5,770	5,770	5,800	6.4	7.1	4.7
Montana	4	4	7	1,020	1,090	1,200	3.9	3.7	5.8
Nebraska	28	17	17	2,360	1,880	1,800	11.9	9.0	9.4
Nevada	2	9	6	980	1,260	1,500	2.0	7.1	4.0
New Hampshire	7	11	14	1,130	1,360	1,600	6.2	8.1	8.8
New Jersey	71	118	99	5,290	6,160	6,300	13.4	19.2	15.7
New Mexico	46	90	18	2,450	2,960	2,300	18.8	30.4	7.8
New York	204	236	217	20,900	22,360	23,100	9.8	10.6	9.4
North Carolina	97	121	94	7,740	9,650	10,600	12.5	12.5	8.9
North Dakota	3	4	4	900	740	900	3.3	5.4	4.4
Ohio	70	85	58	9,750	10,620	9,900	7.2	8.0	5.9
Oklahoma	17	14	14	2,680	2,900	3,000	6.3	4.8	4.7
Oregon	18	19	25	2,690	3,690	3,300	6.7	5.1	7.6
Pennsylvania	131	161	131	12,150	15,650	15,200	10.8	10.3	8.6
Rhode Island	10	7	7	1,730	2,180	1,800	5.8	3.2	3.9
South Carolina	14	23	13	3,230	3,000	3,800	4.3	7.7	3.4
South Dakota	1	0	2	700	670	700	1.4	0.0	2.9
Tennessee	28	42	26	4,720	5,210	5,500	5.9	8.1	4.7
Texas	123	166	155	13,760	15,240	18,400	8.9	10.9	8.4
Utah	39	25	32	3,080	2,770	3,400	12.7	9.0	9.4
Vermont	2	7	6	1,140	1,100	900	1.8	6.4	6.7
Virginia	55	62	46	5,830	7,630	8,800	9.4	8.1	5.2
Washington	39	52	50	5,410	6,740	7,300	7.2	7.7	6.8
West Virginia	2	11	3	1,190	1,190	1,200	1.7	9.2	2.5
Wisconsin	59	80	93	5,390	5,180	6,000	10.9	15.4	15.5
Wyoming	5	3	2	560	490	500	8.9	6.1	4.0
Puerto Rico	0	5	2	640	1,360	1,300	0.0	3.7	1.5

[a]Coefficients of variation for estimates of S&E doctorate holders in academia presented in appendix table 8-14.

SOURCES: U.S. Patent and Trademark Office, Technology Assessment and Forecast Branch, special tabulations of U.S. Colleges and Universities—Utility Patent Grants, Calendar Years 1969–2008; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (various years).

Patents Awarded per 1,000 Individuals in Science and Engineering Occupations

Figure 8-51
Patents awarded per 1,000 individuals in science and engineering occupations: 2010



SOURCES: U.S. Patent and Trademark Office, Electronic Information Products Division/ Patent Monitoring Branch, Patent Counts by Country/State and Year, Utility Patents, January 1, 1963–December 31, 2009; Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

Findings

- About 108,000 utility patents were awarded to inventors residing in the United States in 2010, an increase from the 88,000 utility patents awarded in 2003.
- In 2010, the national average for this indicator was 19.4 patents per 1,000 individuals in an S&E occupation, higher than the average of 17.7 in 2003. Values for individual states varied widely, ranging from 1.8 to 50.7 patents per 1,000 individuals in S&E occupations in 2010.
- More than 25% of all 2010 U.S. utility patents were awarded to residents of California. Texas and New York were each awarded over 7,000 utility patents in 2010, representing nearly 14% of the total.

This indicator represents state patent activity normalized to the size of its S&E workforce, specifically employees in S&E occupations. People in S&E occupations include engineers and computer, mathematical, life, physical, and social scientists. Managers, technicians, elementary and secondary schoolteachers, and medical personnel are not included.

Although the U.S. Patent and Trademark Office (USPTO) grants several types of patents, this indicator covers only utility patents, commonly known as patents for inventions. Utility patents can be granted for any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound and represent a key measure of intellectual property. USPTO classifies patents geographically according to the residence of the first-named inventor. Only U.S.-origin patents are included.

Data on individuals in S&E occupations come from a survey of workplaces that assigns workers to a state based on where they work. Estimates do not include self-employed persons and are developed by the Bureau of Labor Statistics.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Due to the way the data are collected, faculty teaching in S&E fields are not included as workers in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-51
Patents awarded per 1,000 individuals in science and engineering occupations, by state: 2003, 2006, and 2010

State	Patents awarded			Individuals in S&E occupations			Patents/1,000 individuals in S&E occupations		
	2003	2006	2010	2003	2006	2010	2003	2006	2010
United States	87,864	89,795	107,765	4,961,550	5,407,710	5,549,980	17.7	16.6	19.4
Alabama	397	357	444	56,380	66,100	68,450	7.0	5.4	6.5
Alaska	37	36	28	10,600	10,720	15,430	3.5	3.4	1.8
Arizona	1,584	1,705	1,976	92,120	98,110	102,870	17.2	17.4	19.2
Arkansas	152	138	144	21,340	24,860	29,200	7.1	5.6	4.9
California	19,688	22,275	27,337	676,180	730,010	758,830	29.1	30.5	36.0
Colorado	2,069	2,118	2,135	124,140	133,730	143,210	16.7	15.8	14.9
Connecticut	1,667	1,652	1,875	81,380	79,380	74,990	20.5	20.8	25.0
Delaware	346	357	367	17,370	21,550	20,920	19.9	16.6	17.5
District of Columbia	49	63	82	54,890	64,120	59,870	0.9	1.0	1.4
Florida	2,563	2,600	2,978	221,070	246,190	239,600	11.6	10.6	12.4
Georgia	1,333	1,487	1,905	144,170	136,470	145,220	9.2	10.9	13.1
Hawaii	75	84	121	16,090	18,940	19,500	4.7	4.4	6.2
Idaho	1,803	1,663	1,095	22,150	NA	24,130	81.4	NA	45.4
Illinois	3,296	3,294	3,611	211,230	222,470	197,120	15.6	14.8	18.3
Indiana	1,385	1,165	1,492	78,410	80,110	90,710	17.7	14.5	16.4
Iowa	665	666	763	37,320	43,670	44,140	17.8	15.3	17.3
Kansas	428	492	615	51,970	48,620	48,970	8.2	10.1	12.6
Kentucky	439	413	536	45,230	44,680	48,790	9.7	9.2	11.0
Louisiana	390	321	304	41,900	40,180	44,200	9.3	8.0	6.9
Maine	150	142	211	15,020	15,950	17,470	10.0	8.9	12.1
Maryland	1,453	1,410	1,578	149,250	159,470	166,700	9.7	8.8	9.5
Massachusetts	3,908	4,011	4,923	184,690	198,670	208,160	21.2	20.2	23.7
Michigan	3,857	3,758	3,823	182,940	208,520	176,570	21.1	18.0	21.7
Minnesota	2,953	2,957	3,597	117,120	125,930	125,100	25.2	23.5	28.8
Mississippi	162	119	145	22,190	24,910	23,770	7.3	4.8	6.1
Missouri	823	721	975	84,150	96,420	102,300	9.8	7.5	9.5
Montana	121	121	105	11,450	13,010	14,620	10.6	9.3	7.2
Nebraska	185	186	214	30,710	32,500	30,930	6.0	5.7	6.9
Nevada	389	386	540	22,330	26,930	26,840	17.4	14.3	20.1
New Hampshire	677	602	725	23,430	27,680	29,200	28.9	21.7	24.8
New Jersey	3,522	3,172	3,874	161,420	176,460	185,360	21.8	18.0	20.9
New Mexico	390	344	434	33,600	30,800	36,130	11.6	11.2	12.0
New York	6,234	5,627	7,082	272,440	306,810	NA	22.9	18.3	NA
North Carolina	1,871	1,974	2,636	132,440	138,790	155,030	14.1	14.2	17.0
North Dakota	55	66	107	8,430	9,360	11,050	6.5	7.1	9.7
Ohio	3,183	2,630	3,230	177,100	185,190	195,840	18.0	14.2	16.5
Oklahoma	516	544	516	44,360	50,770	44,190	11.6	10.7	11.7
Oregon	1,665	2,060	2,040	61,230	64,520	NA	27.2	31.9	NA
Pennsylvania	3,182	2,842	3,351	185,560	214,910	NA	17.1	13.2	NA
Rhode Island	266	269	276	18,740	18,060	18,210	14.2	14.9	15.2
South Carolina	571	577	517	48,740	53,230	56,230	11.7	10.8	9.2
South Dakota	80	74	70	9,150	10,120	11,150	8.7	7.3	6.3
Tennessee	797	669	925	63,680	67,040	71,850	12.5	10.0	12.9
Texas	6,029	6,308	7,545	365,270	408,710	451,390	16.5	15.4	16.7
Utah	638	684	1,017	45,570	49,690	50,830	14.0	13.8	20.0
Vermont	429	437	642	11,420	12,780	12,670	37.6	34.2	50.7
Virginia	1,110	1,094	1,587	209,280	251,720	255,800	5.3	4.3	6.2
Washington	2,285	3,286	5,258	150,230	171,780	186,210	15.2	19.1	28.2
West Virginia	139	103	118	16,220	17,150	17,070	8.6	6.0	6.9
Wisconsin	1,787	1,688	1,814	93,320	96,860	99,240	19.1	17.4	18.3
Wyoming	71	48	82	6,130	7,640	8,260	11.6	6.3	9.9
Puerto Rico	27	25	24	19,940	23,850	20,850	1.4	1.0	1.2

NA = not available

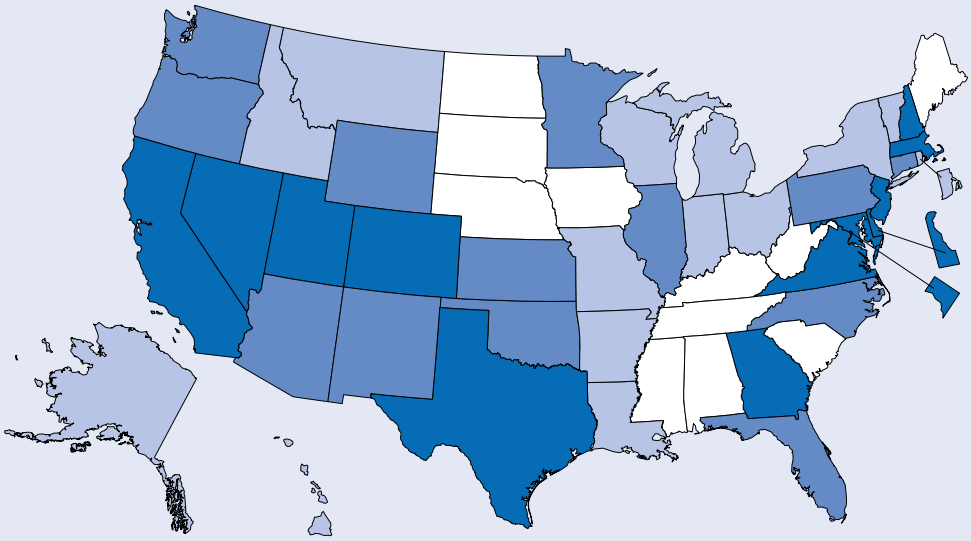
NOTES: Origin of utility patent determined by residence of first-named inventor. National totals for S&E occupations in the United States provided by Occupational Employment Statistics (OES) and include states with suppressed data. OES estimates for 2003, 2006, and 2010 S&E occupations based on May data.

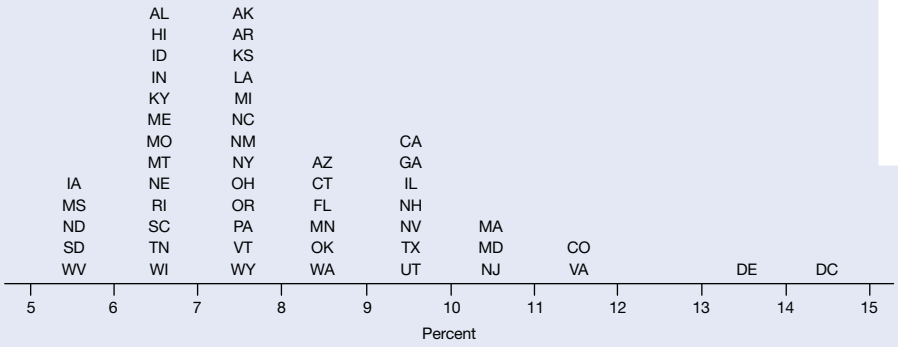
SOURCES: U.S. Patent and Trademark Office, Electronic Information Products Division/Patent Technology Monitoring Branch, Patent Counts by Country/State and Year, Utility Patents, January 1, 1963–December 31, 2009; Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

Science and Engineering Indicators 2012

High-Technology Establishments as a Percentage of All Business Establishments

Figure 8-52
High-technology establishments as a percentage of all business establishments: 2008





1st quartile (9.28%–14.78%)
2nd quartile (7.66%–9.10%)
3rd quartile (6.68%–7.64%)
4th quartile (5.19%–6.55%)

SOURCE: Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Findings

- The number of establishments in high-technology industries rose from about 590,000 in 2003 to more than 646,000 in 2008, an increase of 56,000 or 9%.
- The percentage of U.S. establishments in high-technology industries went from 8.17% to 8.52% of the total business establishments during the 2003–08 period, and most states showed an upward trend in the percentage of their establishments in high-technology industries.
- Between 2003 and 2008, the largest growth in the number of establishments in high-technology industries occurred in California and Florida, which added 8,700 and 6,200 establishments, respectively.
- The state distribution of this indicator is similar to that of three other indicators: bachelor's degree holders, S&E doctoral degree holders, and S&E occupations, all expressed as a share of the workforce.
- EPSCoR states have a lower average value on this indicator than non-EPSCoR states.

This indicator represents the portion of a state's business establishments that are classified as being part of high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. High-technology occupations include scientific, engineering, and technician occupations that employ workers who generally possess in-depth knowledge of the theories and principles of science, engineering, and mathematics at a postsecondary level.

States often consider such industries desirable, in part because they tend to compensate workers better than other industries do. This indicator does not take into account establishment size. Each establishment with an employer identification number is counted without regard to the number of its employees.

The data pertaining to establishments for the years 2003 and later are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Table 8-52
High-technology establishments as a percentage of all business establishments, by state: 2003, 2006, and 2008

State	High-technology establishments			All business establishments			High-technology/business establishments (%)		
	2003	2006	2008	2003	2006	2008	2003	2006	2008
EPSCoR states	83,464	88,790	91,126	1,202,246	1,255,900	1,261,851	6.94	7.07	7.22
Non-EPSCoR states	504,364	541,875	551,958	6,001,637	6,308,168	6,304,793	8.40	8.59	8.75
Average EPSCoR state value	na	na	na	na	na	na	7.08	7.17	7.31
Average non-EPSCoR state value	na	na	na	na	na	na	8.23	8.40	8.57
United States	590,417	633,727	646,195	7,223,240	7,585,035	7,587,695	8.17	8.35	8.52
Alabama	6,347	6,613	6,754	99,453	103,236	103,690	6.38	6.41	6.51
Alaska	1,345	1,494	1,489	19,037	19,838	19,870	7.07	7.53	7.49
Arizona	10,433	11,942	12,269	120,966	137,532	139,876	8.62	8.68	8.77
Arkansas	4,012	4,373	4,675	64,058	66,647	66,558	6.26	6.56	7.02
California	77,614	85,514	86,312	822,751	875,682	876,984	9.43	9.77	9.84
Colorado	15,532	17,259	18,047	143,398	154,254	156,426	10.83	11.19	11.54
Connecticut	7,827	7,810	7,736	91,207	93,232	92,428	8.58	8.38	8.37
Delaware	3,964	3,700	3,407	24,739	25,563	25,134	16.02	14.47	13.56
District of Columbia	2,589	3,062	3,111	19,357	20,967	21,051	13.38	14.60	14.78
Florida	38,118	43,678	44,285	458,823	516,185	506,466	8.31	8.46	8.74
Georgia	18,820	20,825	21,402	208,350	225,577	227,233	9.03	9.23	9.42
Hawaii	2,097	2,325	2,294	30,950	33,063	32,862	6.78	7.03	6.98
Idaho	2,515	2,912	3,083	39,582	45,599	46,133	6.35	6.39	6.68
Illinois	27,606	28,821	29,265	310,589	320,756	321,441	8.89	8.99	9.10
Indiana	9,626	10,158	10,132	147,073	151,024	149,891	6.55	6.73	6.76
Iowa	4,316	4,548	4,659	80,745	82,542	82,207	5.35	5.51	5.67
Kansas	5,716	6,035	6,004	74,637	76,261	75,958	7.66	7.91	7.90
Kentucky	5,453	5,769	5,893	90,358	92,700	92,471	6.03	6.22	6.37
Louisiana	7,218	7,439	7,670	101,933	101,647	103,877	7.08	7.32	7.38
Maine	2,466	2,612	2,642	40,519	41,941	41,683	6.09	6.23	6.34
Maryland	13,428	14,632	15,009	132,782	140,021	138,416	10.11	10.45	10.84
Massachusetts	17,183	17,107	17,434	177,910	174,997	173,933	9.66	9.78	10.02
Michigan	16,937	17,049	16,773	236,221	235,245	228,890	7.17	7.25	7.33
Minnesota	12,834	13,348	13,257	145,364	150,896	148,641	8.83	8.85	8.92
Mississippi	3,269	3,336	3,469	59,565	60,442	60,793	5.49	5.52	5.71
Missouri	9,562	10,130	10,178	149,753	154,177	152,165	6.39	6.57	6.69
Montana	2,108	2,415	2,564	33,616	36,550	37,228	6.27	6.61	6.89
Nebraska	2,797	3,072	3,269	50,213	51,822	52,064	5.57	5.93	6.28
Nevada	5,387	5,975	6,024	53,080	61,061	61,721	10.15	9.79	9.76
New Hampshire	3,511	3,554	3,603	38,119	39,273	38,812	9.21	9.05	9.28
New Jersey	24,286	24,534	24,307	237,097	242,649	238,080	10.24	10.11	10.21
New Mexico	3,322	3,553	3,635	43,386	45,814	46,091	7.66	7.76	7.89
New York	35,926	37,346	38,308	500,559	514,992	517,873	7.18	7.25	7.40
North Carolina	14,869	16,908	17,582	207,500	221,898	224,757	7.17	7.62	7.82
North Dakota	964	1,035	1,117	20,371	21,286	21,514	4.73	4.86	5.19
Ohio	19,875	20,347	20,127	269,202	269,398	263,353	7.38	7.55	7.64
Oklahoma	6,859	7,301	7,536	85,633	89,440	91,186	8.01	8.16	8.26
Oregon	7,500	8,083	8,525	102,462	110,317	111,266	7.32	7.33	7.66
Pennsylvania	22,266	23,486	23,930	297,040	303,507	302,568	7.50	7.74	7.91
Rhode Island	1,976	2,059	2,076	29,172	30,322	29,713	6.77	6.79	6.99
South Carolina	5,869	6,551	6,978	98,735	105,060	106,501	5.94	6.24	6.55
South Dakota	1,206	1,266	1,397	24,314	25,419	25,624	4.96	4.98	5.45
Tennessee	8,196	8,772	8,882	129,458	134,776	136,321	6.33	6.51	6.52
Texas	45,062	47,520	49,419	481,804	508,092	521,383	9.35	9.35	9.48
Utah	5,474	6,531	6,913	60,011	68,612	71,301	9.12	9.52	9.70
Vermont	1,453	1,535	1,548	21,747	22,261	22,067	6.68	6.90	7.01
Virginia	18,868	21,678	22,482	182,783	196,849	197,376	10.32	11.01	11.39
Washington	13,171	14,411	15,116	166,229	179,368	181,688	7.92	8.03	8.32
West Virginia	2,257	2,308	2,343	40,225	40,480	39,579	5.61	5.70	5.92
Wisconsin	9,035	9,438	9,609	141,560	145,590	143,830	6.38	6.48	6.68
Wyoming	1,353	1,558	1,656	18,804	20,175	20,722	7.20	7.72	7.99
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

na = not applicable; NA = not available

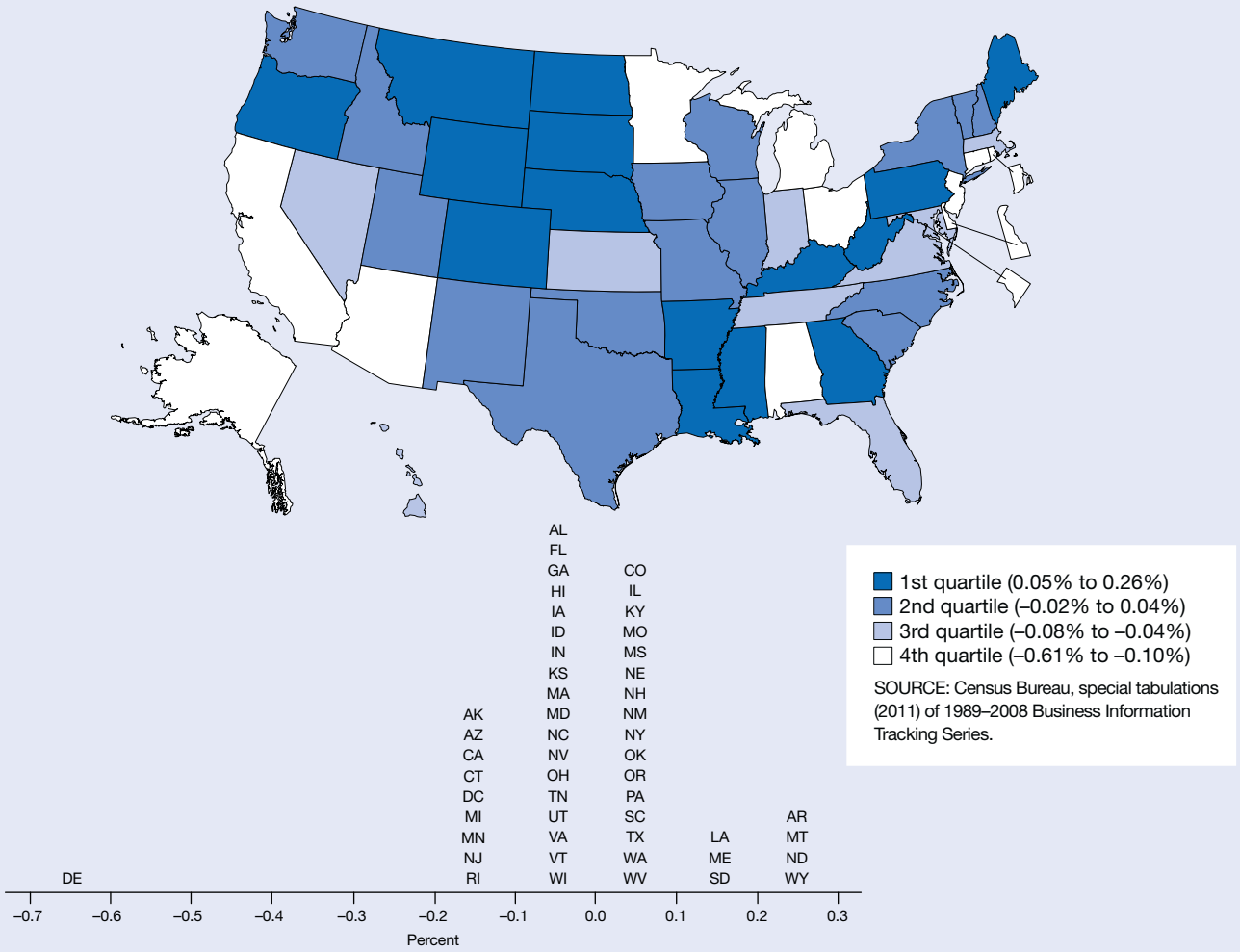
EPSCoR = Experimental Program to Stimulate Competitive Research

NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCE: Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Net High-Technology Business Formations as a Percentage of All Business Establishments

Figure 8-53
Net high-technology business formations as a percentage of all business establishments: 2008



Findings

- In 2008, about 2,800 more businesses in high-technology industries ceased operations than were formed in the United States. From a base of approximately 7.6 million total business establishments, 76,033 new business establishments were formed in high-technology industries and 78,801 ceased operations in those same industries.
- The effect of the business downturn became evident in 2008 as 30 states plus the District of Columbia had more businesses in high-technology industries ceasing operations than were being formed.
- The 7 top-ranking states on this indicator were EPSCoR states. However, the largest numbers of net new businesses were formed in Texas and Pennsylvania.

The business base of a state is constantly changing as new businesses form and others cease to function. The term net business formations refers to the difference between the number of businesses that are formed and the number that cease operations during any particular year.

The ratio of the number of net business formations that occur in high-technology industries to the number of business establishments in a state indicates the changing role of high-technology industries in a state's economy. High positive values indicate an increasingly prominent role for these industries.

The data on business establishments in high-technology industries are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Changes in company name, ownership, or address are not counted as business formations or business deaths. Net business formations cannot be used to directly link the number of high-technology business establishments in different years because the primary industry of some establishments may have changed during the period.

Table 8–53
Net high-technology business formations as a percentage of all business establishments, by state: 2004, 2006, and 2008

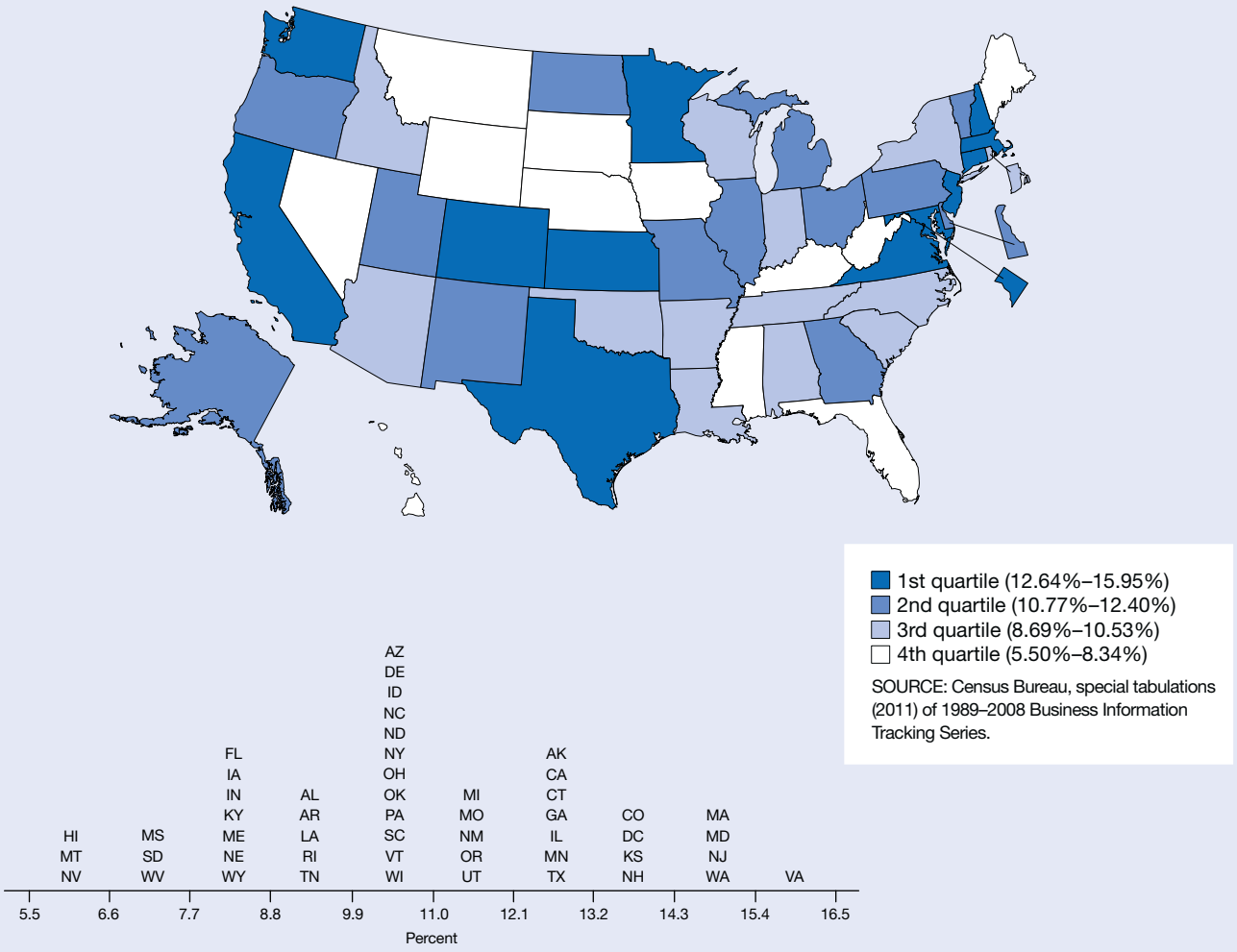
State	Net high-technology business formations			All business establishments			High-technology formations/business establishments (%)		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
United States	11,598	14,031	–2,768	7,366,978	7,585,035	7,587,695	0.16	0.18	–0.04
Alabama	63	134	–65	100,521	103,236	103,690	0.06	0.13	–0.06
Alaska	22	66	–32	19,309	19,838	19,870	0.11	0.33	–0.16
Arizona	357	446	–236	125,330	137,532	139,876	0.28	0.32	–0.17
Arkansas	123	98	131	65,127	66,647	66,558	0.19	0.15	0.20
California	1,099	2,633	–973	838,615	875,682	876,984	0.13	0.30	–0.11
Colorado	490	509	148	146,937	154,254	156,426	0.33	0.33	0.09
Connecticut	–47	44	–124	92,710	93,232	92,428	–0.05	0.05	–0.13
Delaware	–52	–78	–153	25,344	25,563	25,134	–0.21	–0.31	–0.61
District of Columbia	66	195	–25	19,503	20,967	21,051	0.34	0.93	–0.12
Florida	1,743	1,009	–322	483,693	516,185	506,466	0.36	0.20	–0.06
Georgia	642	734	–228	214,200	225,577	227,233	0.30	0.33	–0.10
Hawaii	51	90	–14	31,538	33,063	32,862	0.16	0.27	–0.04
Idaho	54	151	–10	41,205	45,599	46,133	0.13	0.33	–0.02
Illinois	452	243	65	315,093	320,756	321,441	0.14	0.08	0.02
Indiana	208	164	–78	149,050	151,024	149,891	0.14	0.11	–0.05
Iowa	12	150	–14	81,334	82,542	82,207	0.01	0.18	–0.02
Kansas	160	114	–31	75,600	76,261	75,958	0.21	0.15	–0.04
Kentucky	116	42	46	91,598	92,700	92,471	0.13	0.05	0.05
Louisiana	–38	195	121	102,866	101,647	103,877	–0.04	0.19	0.12
Maine	81	31	49	41,131	41,941	41,683	0.20	0.07	0.12
Maryland	475	278	–56	135,699	140,021	138,416	0.35	0.20	–0.04
Massachusetts	156	193	–141	175,426	174,997	173,933	0.09	0.11	–0.08
Michigan	44	27	–408	237,392	235,245	228,890	0.02	0.01	–0.18
Minnesota	185	39	–278	148,276	150,896	148,641	0.12	0.03	–0.19
Mississippi	7	83	52	60,364	60,442	60,793	0.01	0.14	0.09
Missouri	195	279	–7	153,584	154,177	152,165	0.13	0.18	0.00
Montana	108	98	80	34,570	36,550	37,228	0.31	0.27	0.21
Nebraska	64	98	32	50,803	51,822	52,064	0.13	0.19	0.06
Nevada	169	207	–32	55,713	61,061	61,721	0.30	0.34	–0.05
New Hampshire	30	13	0	38,707	39,273	38,812	0.08	0.03	0.00
New Jersey	–80	38	–393	240,013	242,649	238,080	–0.03	0.02	–0.17
New Mexico	37	98	–1	44,071	45,814	46,091	0.08	0.21	0.00
New York	702	274	20	509,873	514,992	517,873	0.14	0.05	0.00
North Carolina	514	692	–53	212,457	221,898	224,757	0.24	0.31	–0.02
North Dakota	–1	34	43	20,763	21,286	21,514	0.00	0.16	0.20
Ohio	204	111	–273	271,078	269,398	263,353	0.08	0.04	–0.10
Oklahoma	75	236	22	87,180	89,440	91,186	0.09	0.26	0.02
Oregon	156	141	93	104,966	110,317	111,266	0.15	0.13	0.08
Pennsylvania	474	278	177	300,832	303,507	302,568	0.16	0.09	0.06
Rhode Island	67	8	–54	29,900	30,322	29,713	0.22	0.03	–0.18
South Carolina	175	230	25	100,947	105,060	106,501	0.17	0.22	0.02
South Dakota	16	9	42	24,693	25,419	25,624	0.06	0.04	0.16
Tennessee	39	372	–75	131,355	134,776	136,321	0.03	0.28	–0.06
Texas	401	1,221	231	489,782	508,092	521,383	0.08	0.24	0.04
Utah	283	382	–16	62,644	68,612	71,301	0.45	0.56	–0.02
Vermont	42	22	–4	22,072	22,261	22,067	0.19	0.10	–0.02
Virginia	845	986	–162	188,533	196,849	197,376	0.45	0.50	–0.08
Washington	346	476	52	170,848	179,368	181,688	0.20	0.27	0.03
West Virginia	16	–13	19	40,732	40,480	39,579	0.04	–0.03	0.05
Wisconsin	215	66	–12	143,739	145,590	143,830	0.15	0.05	–0.01
Wyoming	37	85	54	19,262	20,175	20,722	0.19	0.42	0.26
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available

SOURCE: Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Employment in High-Technology Establishments as a Percentage of Total Employment

Figure 8-54
Employment in high-technology establishments as a percentage of total employment: 2008



Findings

- Employment in high-technology industries in the United States increased slightly from 13.6 million in 2003 to 13.9 million in 2008.
- Nationwide, the value of this indicator declined from 11.96% in 2003 to 11.47% in 2008.
- On this indicator, states varied greatly in 2008, ranging from 5.5% to 16.0% of their workforce employed in high-technology industries.
- During the 2003–08 period, Michigan and New York recorded the largest net losses of jobs in high-technology industries, while Texas, Virginia, Florida, and Georgia posted the largest net gains of jobs in high-technology industries.
- States were distributed similarly on the high-technology employment and high-technology establishment indicators.

This indicator represents the extent to which a state's workforce is employed in high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. High-technology occupations include scientific, engineering, and technician occupations that employ workers who generally possess in-depth knowledge of the theories and principles of science, engineering, and mathematics at a postsecondary level.

The data pertaining to establishments are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data on total employment and NAICS industry establishment employment are provided by the Census Bureau and differ from workforce data provided by the Bureau of Labor Statistics. Total employment refers to all U.S. business establishments with paid employees, but does not include crop and animal production, rail transportation, the postal service, public administration, or most government employees.

Table 8-54
Employment in high-technology establishments as share of total employment, by state: 2003, 2006, and 2008

State	Employment in high-technology establishments			Total employment			High-technology/ Total employment (%)		
	2003	2006	2008	2003	2006	2008	2003	2006	2008
United States	13,563,122	13,733,632	13,870,679	113,373,663	119,892,505	120,933,454	11.96	11.45	11.47
Alabama	152,879	162,197	162,713	1,597,265	1,713,185	1,714,898	9.57	9.47	9.49
Alaska	21,851	27,306	30,794	216,707	241,568	248,274	10.08	11.30	12.40
Arizona	234,603	246,648	243,159	1,997,990	2,334,665	2,334,785	11.74	10.56	10.41
Arkansas	95,180	93,648	93,991	988,822	1,041,868	1,025,872	9.63	8.99	9.16
California	1,781,830	1,826,638	1,785,871	12,986,496	13,830,274	13,746,493	13.72	13.21	12.99
Colorado	274,979	272,952	291,442	1,883,883	2,018,905	2,121,945	14.60	13.52	13.73
Connecticut	210,114	198,450	200,106	1,550,615	1,585,660	1,551,373	13.55	12.52	12.90
Delaware	52,349	47,749	42,178	385,098	388,178	389,927	13.59	12.30	10.82
District of Columbia	54,314	57,297	61,916	422,912	446,502	466,152	12.84	12.83	13.28
Florida	576,274	618,540	614,504	6,548,276	7,534,165	7,367,042	8.80	8.21	8.34
Georgia	413,384	428,272	448,230	3,386,590	3,622,522	3,633,902	12.21	11.82	12.33
Hawaii	25,777	28,848	28,500	458,952	512,488	518,052	5.62	5.63	5.50
Idaho	55,706	59,082	56,624	466,379	546,108	537,706	11.94	10.82	10.53
Illinois	646,285	619,777	662,391	5,204,887	5,356,504	5,463,437	12.42	11.57	12.12
Indiana	219,598	224,644	227,568	2,540,554	2,672,558	2,619,567	8.64	8.41	8.69
Iowa	102,387	96,190	105,099	1,232,709	1,295,143	1,317,765	8.31	7.43	7.98
Kansas	155,023	146,849	169,118	1,109,699	1,142,487	1,185,876	13.97	12.85	14.26
Kentucky	121,838	125,204	129,162	1,471,622	1,551,791	1,570,686	8.28	8.07	8.22
Louisiana	137,029	143,846	145,702	1,603,492	1,592,682	1,654,417	8.55	9.03	8.81
Maine	35,184	37,934	40,028	488,788	508,061	508,905	7.20	7.47	7.87
Maryland	315,887	326,546	333,584	2,088,552	2,231,888	2,235,033	15.12	14.63	14.93
Massachusetts	460,984	496,630	464,759	2,974,164	3,043,643	3,076,457	15.50	16.32	15.11
Michigan	499,133	475,350	424,066	3,884,881	3,817,762	3,637,690	12.85	12.45	11.66
Minnesota	315,994	329,927	318,203	2,381,860	2,475,859	2,517,847	13.27	13.33	12.64
Mississippi	66,566	64,558	64,420	912,004	940,329	944,776	7.30	6.87	6.82
Missouri	254,299	263,494	272,023	2,387,245	2,467,626	2,472,861	10.65	10.68	11.00
Montana	20,296	26,958	23,651	302,932	342,461	359,721	6.70	7.87	6.57
Nebraska	68,975	64,779	66,152	774,858	789,117	805,633	8.90	8.21	8.21
Nevada	61,847	66,875	72,942	970,678	1,165,243	1,156,305	6.37	5.74	6.31
New Hampshire	63,264	64,914	79,105	540,132	577,322	595,473	11.71	11.24	13.28
New Jersey	550,224	550,515	556,378	3,578,674	3,644,967	3,646,897	15.38	15.10	15.26
New Mexico	60,399	68,627	72,838	571,057	628,472	641,010	10.58	10.92	11.36
New York	823,992	790,696	758,087	7,415,430	7,531,772	7,622,956	11.11	10.50	9.94
North Carolina	349,424	358,501	370,028	3,337,552	3,523,954	3,585,005	10.47	10.17	10.32
North Dakota	20,584	22,450	33,096	258,878	278,395	304,892	7.95	8.06	10.85
Ohio	531,491	518,835	514,408	4,769,406	4,824,859	4,728,989	11.14	10.75	10.88
Oklahoma	132,887	141,575	137,334	1,184,312	1,276,743	1,335,467	11.22	11.09	10.28
Oregon	152,140	161,641	166,086	1,338,380	1,461,339	1,482,627	11.37	11.06	11.20
Pennsylvania	566,406	549,180	564,569	5,028,650	5,189,349	5,233,871	11.26	10.58	10.79
Rhode Island	35,806	41,020	42,046	427,369	440,715	433,626	8.38	9.31	9.70
South Carolina	163,373	170,200	167,198	1,550,227	1,631,690	1,654,494	10.54	10.43	10.11
South Dakota	18,890	20,202	22,551	299,723	325,045	337,830	6.30	6.22	6.68
Tennessee	219,898	245,517	225,724	2,298,836	2,472,939	2,493,070	9.57	9.93	9.05
Texas	1,158,481	1,144,997	1,210,285	8,049,300	8,709,575	9,232,889	14.39	13.15	13.11
Utah	99,856	114,815	124,399	900,331	1,038,879	1,114,776	11.09	11.05	11.16
Vermont	29,402	27,001	29,372	256,401	263,759	272,847	11.47	10.24	10.77
Virginia	459,017	502,890	508,097	2,932,471	3,173,767	3,186,112	15.65	15.85	15.95
Washington	401,413	347,710	387,407	2,292,462	2,420,633	2,536,196	17.51	14.36	15.28
West Virginia	46,635	45,284	45,280	561,317	583,033	592,356	8.31	7.77	7.64
Wisconsin	233,967	253,499	259,072	2,382,979	2,481,998	2,496,839	9.82	10.21	10.38
Wyoming	15,008	16,375	18,423	180,866	204,058	221,835	8.30	8.02	8.30
Puerto Rico	NA	NA	NA	NA	NA	NA	NA	NA	NA

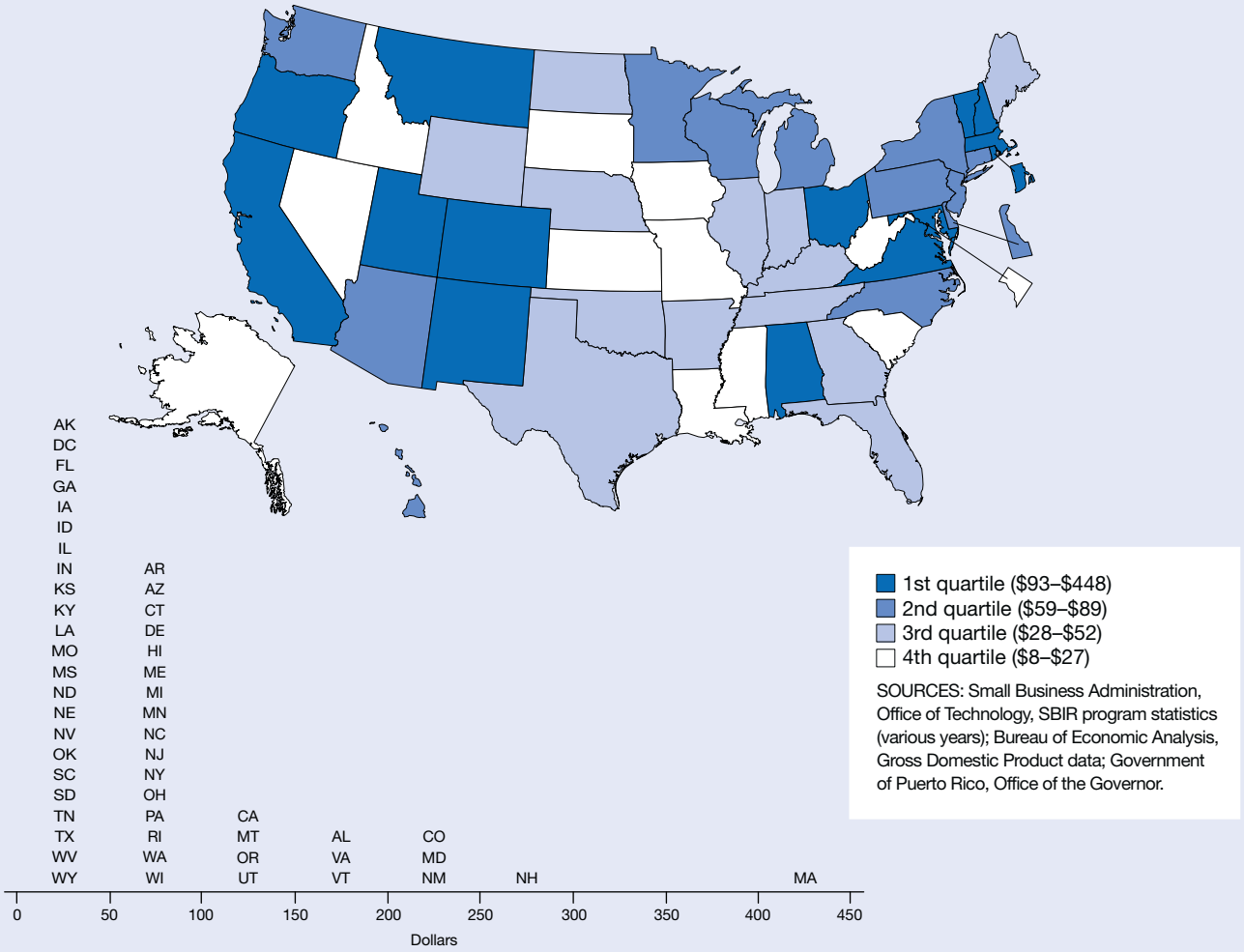
NA = not available

SOURCE: Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Science and Engineering Indicators 2012

Average Annual Federal Small Business Innovation Research Funding per $1 Million of Gross Domestic Product

Figure 8-55
Average annual federal Small Business Innovation Research funding per $1 million of gross domestic product: 2008–10



Findings

- The SBIR program remained unchanged in size at about $1.2 billion both in 2000-2002 and in 2008–10 despite significantly higher spending in 2004–2006.
- Over the 3 year period of 2008–2010, SBIR funds were concentrated in relatively few states; the total of annual state awards range from less than $1 million to $246 million.
- Many of the states with the highest rankings on this indicator are locations of federal laboratories or well-recognized academic research institutions from which innovative small businesses have emerged.
- States with a high ranking on this indicator also tended to rank high on the high-technology and venture capital indicators.

Funds awarded through the federal Small Business Innovation Research (SBIR) program support technological innovation in companies with 500 or fewer employees. Awards are made to evaluate the feasibility and scientific merit of new technology (Phase 1–up to $150,000) and to develop the technology to a point where it can be commercialized (Phase 2–up to $750,000). The total award dollars include both Phase 1 and Phase 2 SBIR awards.

Because of year-to-year fluctuations, this indicator is calculated using 3-year averages. The 3-year average annual SBIR award dollars won by small businesses in a state are divided by the 3-year average annual gross domestic product for the same period. All data are expressed in current dollars. A high value indicates that small business firms in a state are doing cutting-edge development work that attracts federal support.

Table 8-55
Average annual federal Small Business Innovation Research funding per $1 million of gross domestic product, by state: 2000–02, 2004–06, and 2008–10

State	Average SBIR funding ($thousands)			Average state GDP ($millions)			SBIR funding ($)/ $1 million GDP		
	2000–02	2004–06	2008–10	2000–02	2004–06	2008–10	2000–02	2004–06	2008–10
United States	1,234,995	1,904,499	1,258,785	10,224,860	12,551,462	14,279,027	121	152	88
Alabama	23,221	39,143	26,688	120,421	150,815	169,693	193	260	157
Alaska	480	345	793	27,516	38,017	48,056	17	9	16
Arizona	25,485	33,842	19,436	169,727	223,697	254,591	150	151	76
Arkansas	1,663	7,103	5,156	71,008	88,432	100,286	23	80	51
California	255,855	391,456	245,846	1,347,048	1,687,989	1,886,626	190	232	130
Colorado	61,513	85,830	58,409	179,766	216,425	254,174	342	397	230
Connecticut	19,923	26,823	18,742	167,173	198,636	230,256	119	135	81
Delaware	4,636	6,662	3,556	42,926	54,230	60,538	108	123	59
District of Columbia	5,069	3,725	1,472	63,259	82,698	99,847	80	45	15
Florida	26,348	41,292	30,486	507,821	677,240	742,762	52	61	41
Georgia	12,353	18,234	14,148	304,529	362,604	400,819	41	50	35
Hawaii	3,716	7,796	4,921	42,830	56,749	66,102	87	137	74
Idaho	2,365	3,994	1,252	36,692	47,750	54,769	64	84	23
Illinois	17,782	24,985	21,848	486,319	572,784	640,175	37	44	34
Indiana	6,048	15,759	11,505	202,128	240,248	266,395	30	66	43
Iowa	2,985	4,091	3,034	95,298	120,190	137,906	31	34	22
Kansas	3,808	5,359	2,569	88,939	105,782	125,016	43	51	21
Kentucky	3,280	4,406	5,886	116,894	139,389	158,217	28	32	37
Louisiana	2,585	5,002	2,669	136,238	191,291	212,470	19	26	13
Maine	3,098	9,264	2,607	38,156	45,872	50,551	81	202	52
Maryland	60,481	97,376	64,011	195,088	247,143	287,360	310	394	223
Massachusetts	181,889	250,946	165,114	280,962	323,833	368,297	647	775	448
Michigan	21,110	43,732	27,485	341,731	372,353	376,426	62	117	73
Minnesota	18,182	24,292	19,635	194,424	237,233	263,765	94	102	74
Mississippi	2,524	3,364	755	67,551	81,735	96,193	37	41	8
Missouri	4,967	9,959	5,725	186,134	216,371	241,105	27	46	24
Montana	6,847	8,460	4,539	22,839	30,069	35,635	300	281	127
Nebraska	2,259	4,003	2,404	59,339	72,889	87,027	38	55	28
Nevada	4,315	6,847	1,608	79,282	113,213	127,652	54	60	13
New Hampshire	15,483	22,097	16,847	45,109	53,672	59,383	343	412	284
New Jersey	35,400	48,903	32,895	363,315	431,713	480,947	97	113	68
New Mexico	19,955	24,172	17,663	51,974	67,821	77,906	384	356	227
New York	48,783	84,178	72,144	801,591	962,740	1,120,908	61	87	64
North Carolina	16,220	32,246	30,515	291,887	353,857	411,965	56	91	74
North Dakota	1,900	1,861	1,253	19,258	24,692	32,663	99	75	38
Ohio	50,697	79,947	43,551	387,263	442,611	470,118	131	181	93
Oklahoma	3,718	7,918	4,797	95,791	121,670	147,260	39	65	33
Oregon	14,792	28,485	18,417	114,930	146,903	172,029	129	194	107
Pennsylvania	42,299	79,624	44,611	408,829	483,960	553,805	103	165	81
Rhode Island	4,297	7,803	4,458	35,746	44,517	48,027	120	175	93
South Carolina	5,327	6,527	4,355	119,900	141,993	160,910	44	46	27
South Dakota	1,184	503	475	25,587	31,560	38,814	46	16	12
Tennessee	9,971	10,435	8,364	184,826	224,988	248,817	54	46	34
Texas	45,318	87,373	46,517	761,387	977,950	1,185,415	60	89	39
Utah	11,446	14,424	11,255	72,145	91,277	112,731	159	158	100
Vermont	2,956	5,061	3,823	18,822	22,778	24,960	157	222	153
Virginia	73,712	100,364	75,508	277,582	353,956	412,148	266	284	183
Washington	30,253	49,405	29,865	231,737	279,233	335,525	131	177	89
West Virginia	2,292	5,009	1,655	43,004	52,028	61,575	53	96	27
Wisconsin	11,944	21,382	16,402	183,789	219,114	242,343	65	98	68
Wyoming	2,262	2,695	1,116	18,348	26,752	38,068	123	101	29
Puerto Rico	219	453	NA	NA	NA	NA	NA	NA	NA

NA = not available

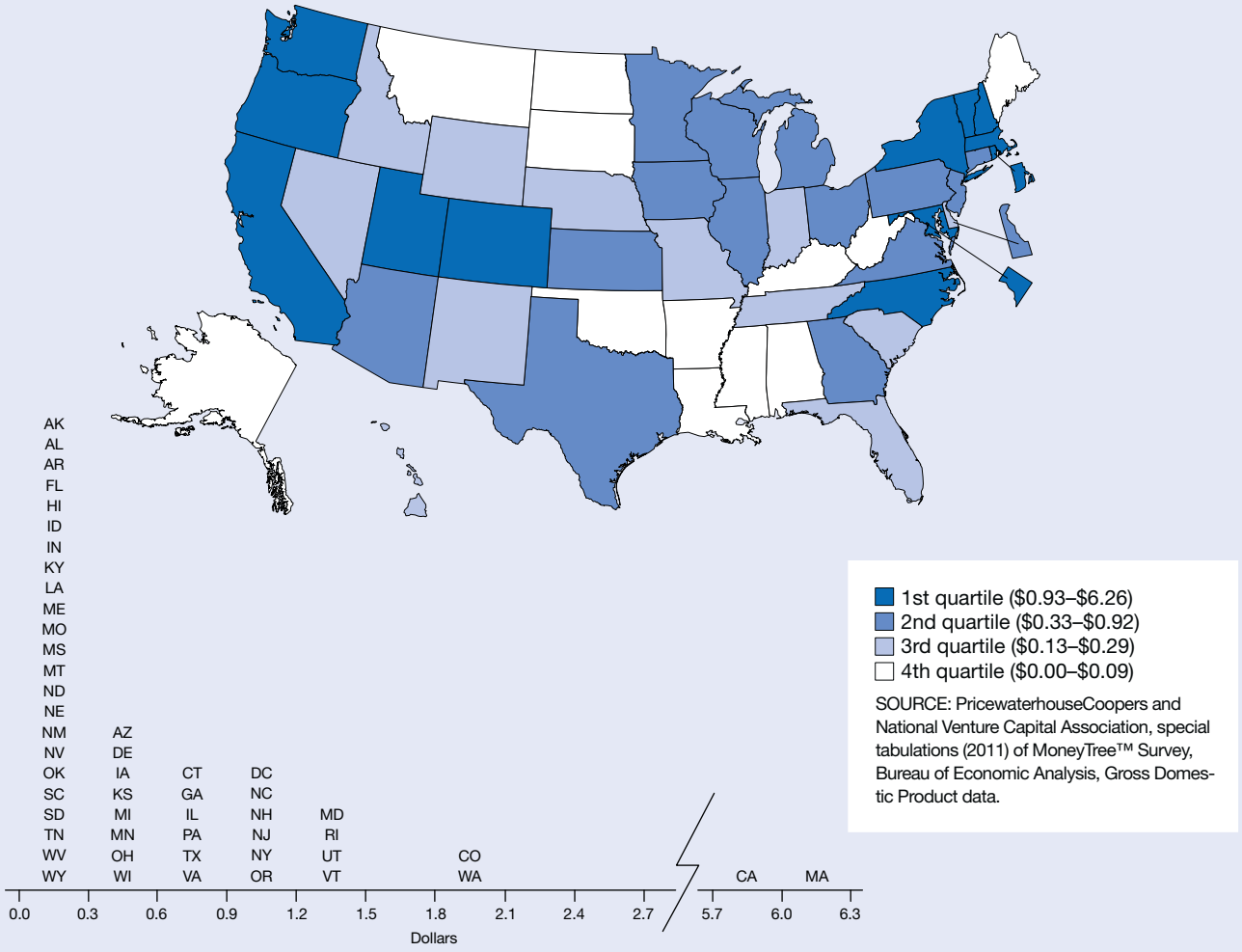
GDP = gross domestic product; SBIR = Small Business Innovation Research

NOTE: GDP reported in current dollars.

SOURCES: Small Business Administration, Office of Technology, SBIR program statistics (various years); Bureau of Economic Analysis, Gross Domestic Product data; Government of Puerto Rico, Office of the Governor.

Venture Capital Disbursed per $1,000 of Gross Domestic Product

Figure 8-56
Venture capital disbursed per $1,000 of gross domestic product: 2010



Findings

- The total amount of venture capital invested in the United States has been highly volatile during the past decade. In 2000, it was at $105 billion, decreasing to $22 billion in 2010. The average value for this indicator for the United States was $10.59 in 2000 and $1.50 in 2010.
- Venture capital investment is concentrated in relatively few states. Companies in California received 50% of the total venture capital disbursed in the United States in 2010, followed by companies in Massachusetts with 11%. Four states reported no venture capital investment in 2010.
- In 2010, the value of this indicator across states ranged from $0.0 to $6.26.
- The average indicator value for EPSCoR states was substantially lower than that for non-EPSCoR states. The state distribution of venture capital was similar to indicators of high-technology business activity.

Venture capital represents an important source of funding for startup companies. It supports the growth and expansion of these companies early in their development, before they establish a predictable sales history that would qualify them for other types of financing.

This indicator represents the relative magnitude of venture capital investments in a state after adjusting for the size of the state's economy. The indicator is expressed as dollars of venture capital disbursed per $1,000 of gross domestic product. High values indicate that companies in those states are successfully attracting venture capital to fuel their growth. Access to venture capital financing varies greatly among states.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, IPOs, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time.

Table 8-56
Venture capital disbursed per $1,000 of gross domestic product, by state: 2000, 2005, and 2010

State	Venture capital disbursed ($millions)			State GDP ($millions)			Venture capital ($)/$1,000 GDP		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	104,678	23,115	21,799	9,884,171	12,554,535	14,551,782	10.59	1.84	1.50
Alabama	266	20	1	116,014	151,096	172,567	2.30	0.13	0.00
Alaska	4	0	0	25,913	37,824	49,120	0.14	0.00	0.00
Arizona	34	13	83	161,901	222,968	253,609	0.21	0.06	0.33
Arkansas	626	123	5	68,146	88,227	102,566	9.18	1.40	0.05
California	43,034	11,011	10,978	1,317,343	1,691,991	1,901,088	32.67	6.51	5.77
Colorado	4,165	644	468	171,930	217,412	257,641	24.22	2.96	1.81
Connecticut	1,509	202	200	163,943	197,055	237,261	9.21	1.02	0.84
Delaware	135	7	31	40,957	54,749	62,280	3.29	0.13	0.50
District of Columbia	478	28	96	58,269	82,837	103,288	8.21	0.33	0.93
Florida	2,687	329	186	481,115	680,277	747,735	5.58	0.48	0.25
Georgia	2,325	254	333	294,479	363,154	403,070	7.90	0.70	0.83
Hawaii	203	12	11	41,372	56,869	66,760	4.91	0.21	0.17
Idaho	20	8	8	36,091	48,675	55,435	0.54	0.16	0.14
Illinois	2,358	277	575	474,444	569,544	651,518	4.97	0.49	0.88
Indiana	269	104	69	198,020	239,575	275,676	1.36	0.43	0.25
Iowa	31	32	52	93,287	120,258	142,698	0.33	0.27	0.36
Kansas	265	2	42	85,742	105,164	127,170	3.09	0.02	0.33
Kentucky	202	32	12	113,108	139,336	163,269	1.78	0.23	0.07
Louisiana	113	4	18	131,430	197,163	218,853	0.86	0.02	0.08
Maine	140	5	2	36,395	45,587	51,643	3.85	0.10	0.04
Maryland	1,820	488	357	182,953	248,139	295,304	9.95	1.97	1.21
Massachusetts	10,312	2,583	2,373	272,680	323,301	378,729	37.82	7.99	6.26
Michigan	337	81	152	336,786	375,260	384,171	1.00	0.22	0.39
Minnesota	1,039	242	140	188,449	238,367	270,039	5.51	1.02	0.52
Mississippi	20	10	0	65,615	81,500	97,461	0.30	0.12	0.00
Missouri	590	56	61	180,982	216,633	244,016	3.26	0.26	0.25
Montana	17	27	2	21,629	30,088	36,067	0.77	0.91	0.05
Nebraska	143	13	12	57,233	72,504	89,786	2.50	0.18	0.13
Nevada	31	159	29	75,907	114,771	125,650	0.41	1.38	0.23
New Hampshire	751	92	57	44,067	53,653	60,283	17.03	1.72	0.94
New Jersey	3,290	887	451	349,334	429,985	487,335	9.42	2.06	0.92
New Mexico	21	76	23	50,262	67,776	79,678	0.42	1.13	0.29
New York	6,835	1,127	1,339	770,621	961,941	1,159,540	8.87	1.17	1.15
North Carolina	1,825	395	456	281,418	354,973	424,935	6.49	1.11	1.07
North Dakota	6	0	0	18,250	24,672	34,685	0.33	0.00	0.00
Ohio	976	140	157	381,175	444,715	477,699	2.56	0.31	0.33
Oklahoma	53	0	13	91,292	120,662	147,543	0.58	0.00	0.09
Oregon	793	134	174	112,974	143,349	174,151	7.02	0.94	1.00
Pennsylvania	2,873	482	508	395,811	482,324	569,679	7.26	1.00	0.89
Rhode Island	75	76	65	33,522	44,169	49,234	2.23	1.73	1.32
South Carolina	448	3	21	115,392	141,929	164,445	3.88	0.02	0.13
South Dakota	0	0	0	24,009	31,641	39,893	0.01	0.00	0.00
Tennessee	453	89	52	177,582	224,522	254,806	2.55	0.39	0.20
Texas	6,094	1,175	891	732,987	970,997	1,207,494	8.31	1.21	0.74
Utah	674	192	143	69,483	90,748	114,538	9.69	2.12	1.25
Vermont	46	35	33	18,033	22,773	25,620	2.57	1.55	1.28
Virginia	3,310	526	375	261,894	356,852	423,860	12.64	1.47	0.89
Washington	2,790	837	613	227,828	279,405	340,460	12.25	3.00	1.80
West Virginia	5	11	4	41,419	51,964	64,642	0.11	0.20	0.06
Wisconsin	192	69	122	177,638	218,923	248,265	1.08	0.31	0.49
Wyoming	0	4	10	17,047	26,238	38,527	0.00	0.15	0.26
Puerto Rico	NA	NA	4	69,208	86,157	NA	NA	NA	NA

NA = not available

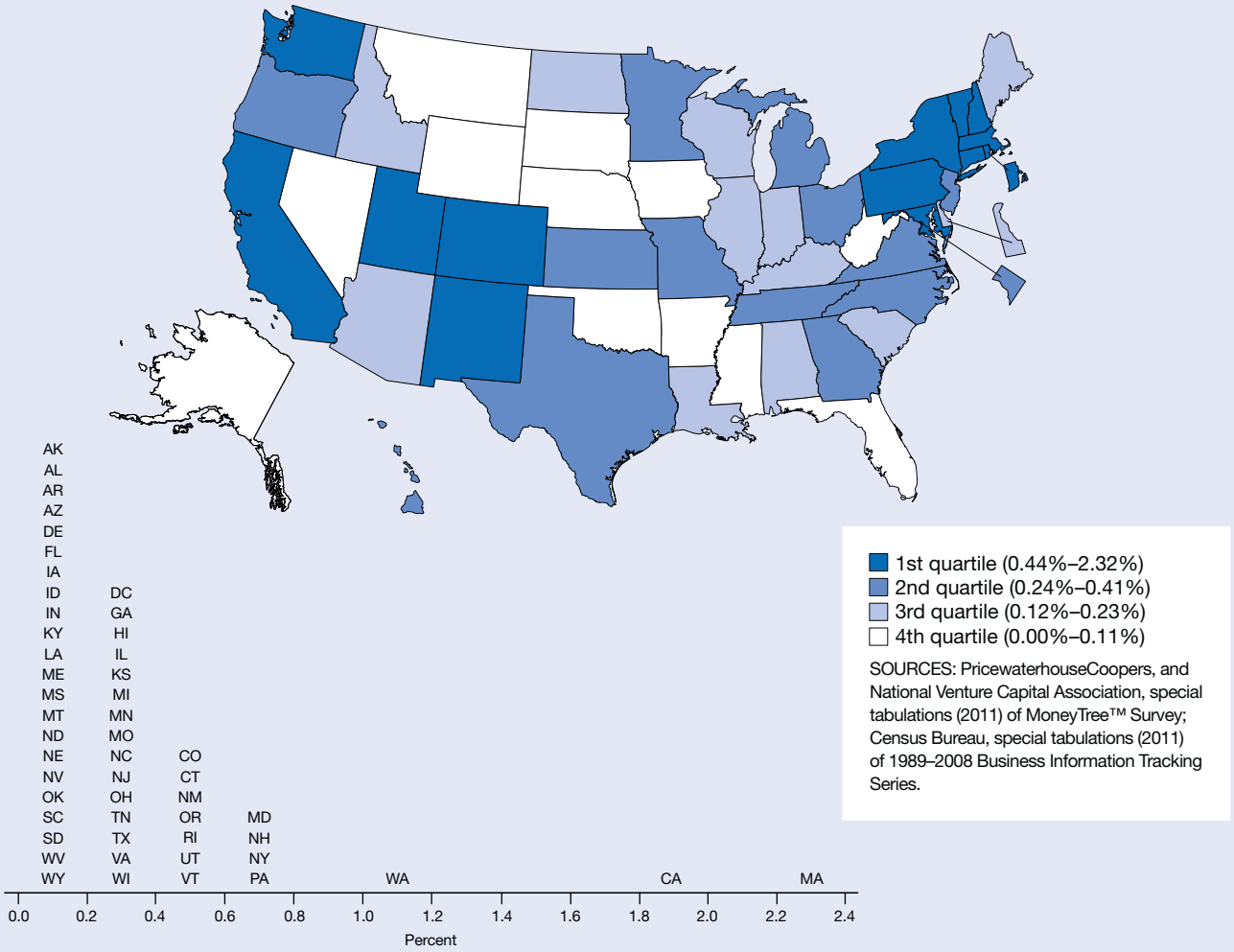
GDP = gross domestic product

NOTE: GDP reported in current dollars.

SOURCES: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011) of MoneyTree™ Survey; Bureau of Economic Analysis, Gross Domestic Product data; United Nations Statistics Division.

Venture Capital Deals as a Percentage of High-Technology Business Establishments

Figure 8-57
Venture capital deals as a percentage of high-technology business establishments: 2008



SOURCES: PricewaterhouseCoopers, and National Venture Capital Association, special tabulations (2011) of MoneyTree™ Survey; Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Findings

- The number of venture capital deals that involved U.S. companies increased from about 2,900 deals in 2003 to more than 3,800 deals in 2008.
- In 2008, venture capital deals were concentrated in only a few states. Indicator values ranged from a low of zero to a high of 2.32% with a median value of 0.24%.
- Companies in high-technology industries located in Massachusetts were the most successful in accessing venture capital investments in 2008, with a 2.32% rate. California companies in high-technology industries obtained venture capital investment at a rate of 1.80% and Washington companies attained a rate of 1.08%. No other states reached a rate of 1.00%.
- In 2008, companies in EPSCoR states tended to receive little venture capital investment, and no venture capital deals were reported in three EPSCoR states.

This indicator represents the extent to which high-technology companies in a state receive venture capital investments. The value of the indicator is calculated by dividing the number of venture capital deals by the number of companies operating in high-technology industries in that state. High values indicate that high-technology companies in a state are frequently using venture capital to facilitate their growth and development. In most cases, a company will not receive more than one infusion of venture capital in a given year.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, IPOs, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time. Venture capital investment can help to grow a high-technology company.

Data on business establishments operating in high-technology industries for the years 2003 and later are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for years prior to 2003 are not directly comparable.

Table 8-57
Venture capital deals as a percentage of high-technology business establishments, by state: 2003, 2006, and 2008

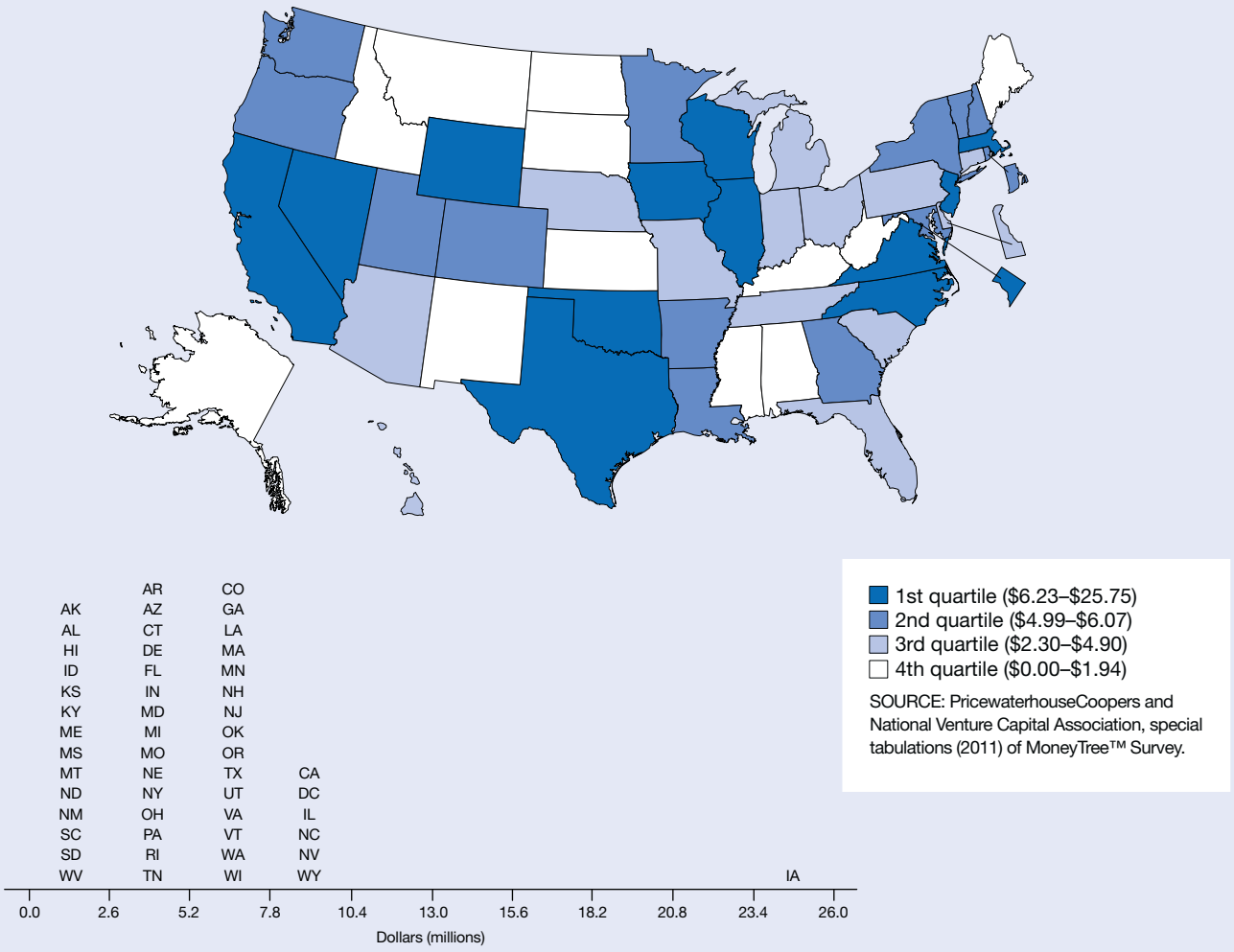
State	Venture capital deals			High-technology establishments			Venture capital deals/ high-technology establishments (%)		
	2003	2006	2008	2003	2006	2008	2003	2006	2008
United States	2,903	3,672	3,806	590,417	633,727	646,195	0.49	0.58	0.59
Alabama	9	7	8	6,347	6,613	6,754	0.14	0.11	0.12
Alaska	0	0	0	1,345	1,494	1,489	0.00	0.00	0.00
Arizona	16	29	20	10,433	11,942	12,269	0.15	0.24	0.16
Arkansas	3	6	0	4,012	4,373	4,675	0.07	0.14	0.00
California	1,122	1,549	1,552	77,614	85,514	86,312	1.45	1.81	1.80
Colorado	72	98	100	15,532	17,259	18,047	0.46	0.57	0.55
Connecticut	34	30	34	7,827	7,810	7,736	0.43	0.38	0.44
Delaware	1	3	6	3,964	3,700	3,407	0.03	0.08	0.18
District of Columbia	6	8	11	2,589	3,062	3,111	0.23	0.26	0.35
Florida	61	56	36	38,118	43,678	44,285	0.16	0.13	0.08
Georgia	55	81	80	18,820	20,825	21,402	0.29	0.39	0.37
Hawaii	6	10	6	2,097	2,325	2,294	0.29	0.43	0.26
Idaho	5	1	6	2,515	2,912	3,083	0.20	0.03	0.19
Illinois	58	55	67	27,606	28,821	29,265	0.21	0.19	0.23
Indiana	8	15	16	9,626	10,158	10,132	0.08	0.15	0.16
Iowa	1	2	5	4,316	4,548	4,659	0.02	0.04	0.11
Kansas	2	7	23	5,716	6,035	6,004	0.03	0.12	0.38
Kentucky	3	7	10	5,453	5,769	5,893	0.06	0.12	0.17
Louisiana	1	3	10	7,218	7,439	7,670	0.01	0.04	0.13
Maine	2	4	4	2,466	2,612	2,642	0.08	0.15	0.15
Maryland	84	110	97	13,428	14,632	15,009	0.63	0.75	0.65
Massachusetts	378	395	405	17,183	17,107	17,434	2.20	2.31	2.32
Michigan	17	18	43	16,937	17,049	16,773	0.10	0.11	0.26
Minnesota	58	39	47	12,834	13,348	13,257	0.45	0.29	0.35
Mississippi	4	1	0	3,269	3,336	3,469	0.12	0.03	0.00
Missouri	23	13	24	9,562	10,130	10,178	0.24	0.13	0.24
Montana	1	0	2	2,108	2,415	2,564	0.05	0.00	0.08
Nebraska	2	3	3	2,797	3,072	3,269	0.07	0.10	0.09
Nevada	6	7	6	5,387	5,975	6,024	0.11	0.12	0.10
New Hampshire	32	21	28	3,511	3,554	3,603	0.91	0.59	0.78
New Jersey	88	94	90	24,286	24,534	24,307	0.36	0.38	0.37
New Mexico	5	9	19	3,322	3,553	3,635	0.15	0.25	0.52
New York	119	209	235	35,926	37,346	38,308	0.33	0.56	0.61
North Carolina	76	62	51	14,869	16,908	17,582	0.51	0.37	0.29
North Dakota	2	0	2	964	1,035	1,117	0.21	0.00	0.18
Ohio	25	41	52	19,875	20,347	20,127	0.13	0.20	0.26
Oklahoma	2	6	5	6,859	7,301	7,536	0.03	0.08	0.07
Oregon	21	31	35	7,500	8,083	8,525	0.28	0.38	0.41
Pennsylvania	90	128	171	22,266	23,486	23,930	0.40	0.55	0.71
Rhode Island	10	7	10	1,976	2,059	2,076	0.51	0.34	0.48
South Carolina	4	3	11	5,869	6,551	6,978	0.07	0.05	0.16
South Dakota	1	1	1	1,206	1,266	1,397	0.08	0.08	0.07
Tennessee	22	11	21	8,196	8,772	8,882	0.27	0.13	0.24
Texas	165	188	146	45,062	47,520	49,419	0.37	0.40	0.30
Utah	22	39	33	5,474	6,531	6,913	0.40	0.60	0.48
Vermont	6	9	9	1,453	1,535	1,548	0.41	0.59	0.58
Virginia	80	89	81	18,868	21,678	22,482	0.42	0.41	0.36
Washington	81	143	164	13,171	14,411	15,116	0.61	0.99	1.08
West Virginia	5	3	1	2,257	2,308	2,343	0.22	0.13	0.04
Wisconsin	8	20	19	9,035	9,438	9,609	0.09	0.21	0.20
Wyoming	1	1	1	1,353	1,558	1,656	0.07	0.06	0.06
Puerto Rico	1	2	NA	NA	NA	NA	NA	NA	NA

NA = not available

SOURCES: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011) of MoneyTree™ Survey; Census Bureau, special tabulations (2011) of 1989–2008 Business Information Tracking Series.

Venture Capital Disbursed per Venture Capital Deal

Figure 8-58
Venture capital disbursed per venture capital deal: 2010



Findings

- In 2010, the size of the average venture capital investment in the United States was about $6.7 million per deal. This is a decline from $13 million per deal in 2000 expressed in current dollars. The size of venture capital deals has not changed appreciably since 2005.
- After a high venture capital investment in 2000 of over 7,800 deals, the total number of deals has remained essentially constant for the second half of the decade at 3,152 in 2005 and 3,266 in 2010.
- In 2010, the state distribution on this indicator was skewed from a high value of $26 million per deal to a low of zero, with a median value of about $5 million per deal. The value of this indicator continued to show a high level of variability from year to year and among states.

This indicator represents the average size of the venture capital investments being made in a state. The indicator is expressed as the total dollars of venture capital invested in millions divided by the number of companies receiving venture capital. The availability of venture capital may vary widely based on stage of investment, type of company, and numerous other factors.

Venture capital data measure cash-for-equity investments by the professional venture capital community in private emerging companies in the United States. Data exclude debt, buy-outs, recapitalizations, IPOs, and other forms of private equity that do not involve cash. Results are updated periodically. All data are subject to change at any time.

This indicator provides some measure of the magnitude of investment that developing companies in a state have attracted from venture capital sources. Some states have relatively few venture capital deals taking place in a given year; thus, the value of this indicator may show large fluctuations on a year-to-year basis. Twenty states reported fewer than 10 venture capital deals in 2010. In such states, a single large or small venture capital investment can substantially affect the value of this indicator.

Table 8-58
Venture capital disbursed per venture capital deal, by state: 2000, 2005, and 2010

State	Venture capital disbursed ($millions)			Venture capital deals			Venture capital/deal ($millions)		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
United States	104,678	23,115	21,799	7,873	3,152	3,266	13.30	7.33	6.67
Alabama	266	20	1	28	3	2	9.51	6.73	0.30
Alaska	4	0	0	1	0	0	3.50	0.00	0.00
Arizona	626	123	83	64	25	17	9.77	4.94	4.88
Arkansas	34	13	5	5	2	1	6.86	6.30	5.00
California	43,034	11,011	10,978	2,938	1,310	1,289	14.65	8.40	8.52
Colorado	4,165	644	468	218	76	77	19.10	8.47	6.07
Connecticut	1,509	202	200	116	32	52	13.01	6.30	3.85
Delaware	135	7	31	4	3	9	33.68	2.40	3.45
District of Columbia	478	28	96	44	11	11	10.87	2.52	8.77
Florida	2,687	329	186	185	55	39	14.52	5.98	4.76
Georgia	2,325	254	333	223	63	63	10.43	4.04	5.29
Hawaii	203	12	11	3	4	5	67.67	2.98	2.30
Idaho	20	8	8	4	2	4	4.88	4.00	1.94
Illinois	2,358	277	575	199	54	60	11.85	5.14	9.59
Indiana	269	104	69	26	10	14	10.35	10.36	4.90
Iowa	31	32	52	4	4	2	7.70	8.03	25.75
Kansas	265	2	42	22	4	36	12.04	0.43	1.16
Kentucky	202	32	12	14	3	14	14.41	10.67	0.85
Louisiana	113	4	18	15	4	3	7.51	1.00	5.98
Maine	140	5	2	15	2	5	9.35	2.25	0.44
Maryland	1,820	488	357	175	101	70	10.40	4.84	5.10
Massachusetts	10,312	2,583	2,373	766	366	351	13.46	7.06	6.76
Michigan	337	81	152	53	19	33	6.36	4.25	4.59
Minnesota	1,039	242	140	109	43	26	9.53	5.64	5.37
Mississippi	20	10	0	3	2	0	6.50	5.00	0.00
Missouri	590	56	61	49	10	14	12.05	5.60	4.35
Montana	17	27	2	3	2	2	5.57	13.70	0.96
Nebraska	143	13	12	10	3	3	14.31	4.37	3.83
Nevada	31	159	29	10	9	3	3.08	17.61	9.53
New Hampshire	751	92	57	56	24	10	13.40	3.85	5.69
New Jersey	3,290	887	451	185	74	71	17.79	11.99	6.35
New Mexico	21	76	23	8	15	13	2.64	5.09	1.78
New York	6,835	1,127	1,339	605	129	266	11.30	8.74	5.03
North Carolina	1,825	395	456	153	51	57	11.93	7.74	8.00
North Dakota	6	0	0	1	0	0	6.10	0.00	0.00
Ohio	976	140	157	77	38	52	12.67	3.68	3.02
Oklahoma	53	0	13	9	0	2	5.83	0.00	6.50
Oregon	793	134	174	68	26	33	11.66	5.17	5.26
Pennsylvania	2,873	482	508	254	99	153	11.31	4.86	3.32
Rhode Island	75	76	65	9	13	13	8.29	5.87	4.99
South Carolina	448	3	21	13	1	8	34.43	2.70	2.59
South Dakota	0	0	0	1	0	0	0.30	0.00	0.00
Tennessee	453	89	52	45	21	18	10.07	4.22	2.89
Texas	6,094	1,175	891	466	168	143	13.08	6.99	6.23
Utah	674	192	143	61	28	25	11.04	6.86	5.72
Vermont	46	35	33	4	5	6	11.60	7.04	5.47
Virginia	3,310	526	375	275	87	51	12.03	6.04	7.36
Washington	2,790	837	613	254	126	116	10.98	6.64	5.29
West Virginia	5	11	4	2	5	4	2.25	2.10	0.94
Wisconsin	192	69	122	21	16	19	9.13	4.28	6.41
Wyoming	0	4	10	0	4	1	0.00	1.00	10.00
Puerto Rico	NA	NA	4	10	1	1	NA	NA	4.49

NA = not available

NOTE: Venture capital amounts reported in current dollars.

SOURCE: PricewaterhouseCoopers and National Venture Capital Association, special tabulations (2011) of MoneyTree™ Survey.

Science and Engineering Indicators 2012